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BRITISH MEDICAL JOURNAL

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SATURDAY DECEMBER 16 1944

TABLE OF CONTENTS

Smallpox Vaccination: Multiple-pressure Method H. J. PARISH, M.D. 781
Two-stage Treatment of Diabetes R. H. MICKS, M.D. 784
Gonorrhoea in the Navy STAFFORD MATTHEWS, M.B., and F. G. BEILBY, B.M. 787
Wound Treatment by Delayed Suture WILLIAM PATRICK, F.R.C.S.Ed. 788
Origin of Bronchogenic Tuberculosis in the Adult WALTER PAGEL, M.D. 791

MEDICAL MEMORANDA

Hernia of Caecum into Lesser Sac of Peritoneum Complicated by Volvulus. H. A. HAXTON, F.R.C.S. 792

GENERAL ARTICLES AND NEWS

Apparatus for Continuous Pentothal. D. E. DUNNILL, M.B. 793
UNIVERSITIES AND COLLEGES.....805
MEDICAL NEWS.....805

REVIEWS

Reaction to Injury.....792
Psychiatry.....792
Guide to Pharmacology.....793
Notes on Books.....793

LETTERS AND ANSWERS

Etherington-Wilson Technique for Spinal Analgesia—Stilboestrol for Masturbation — Chronic Otorrhoea — Leucodermia—Sprouting Legumes—Survival after Long Immersion—Obstetric Forceps—Smegma under the Prepuce—Piercing the Ears—Brandy as an Anaesthetic—Hints for "Hangovers"—The "Doctor" Label—Correction 805-6

Epidemiology Section.....804-5

LEADING ARTICLES

A.R.M. on White Paper.....794
Black Twin of Silicosis.....795

ANNOTATIONS

Posterior Pituitary and the Uterus.....796
Nutritive Value of Yeast.....796
Conway Evans Prize.....797
Thirty Years of District Nursing.....797
Treatment in Psychiatry.....797

OBITUARY

Edwin Goodall, C.B.E., M.D., F.R.C.P. ...803
W. A. Cochrane, F.R.C.S.Ed. 803
W. M. Ash, F.R.C.S.Ed., D.P.H. 804
Wiclif McCready, F.R.C.S.I. 804

SUPPLEMENT

THE REPRESENTATIVE MEETING
National Health Service Debate
Dec. 5, 6, 7, 8
G.M.C.: Winter Session—*concluded 166*
CORRESPONDENCE.....*165*
CERTIFICATES FOR SURGICAL CORSETS *165*
H.M. FORCES APPOINTMENTS.....*167*

CORRESPONDENCE

R.M.B.F. Christmas Gifts. Lord MORAN, P.R.C.P. 798
Anaesthesia and Shock. D. C. DEVITT, M.R.C.S. 798
Smoking and Duodenal Ulcer. Sir ADOLPHE ABRAHAMS, M.D. 798
Beds for Tuberculous Patients. E. G. W. HOFFSTAEDT, M.D. 798
"Unusual" Case of Tuberculosis. S. LYLE CUMMINS, M.D. 799
Injuries from Flying Glass. M. J. SMYTH, F.R.C.S. 799
Insulin Syringes. T. L. OLIVER, M.B. 799
Vitamin B in Treatment of Head Injuries. A. GUIRDHAM, M.D., and F. KOHN, M.D. 800
Pseudo-migraine. LOUIS MOSS, M.R.C.S. 800
Latent Mastoiditis in Infancy. R. ARDEN JONES, M.B.; H. ZALIN, M.B. 800
Artificial Insemination. P. P. MCKINNEY, M.B.; J. HOBART NIXON; M.D.; I. G. WICKES, M.B.; J. PHELAN, M.B.; F. H. STEVENSON, M.D. 801
A Renal Service. CLIFFORD MORSON, F.R.C.S. 802
Extra Milk for Patients. NORMAN GLAISTER, M.B. 802

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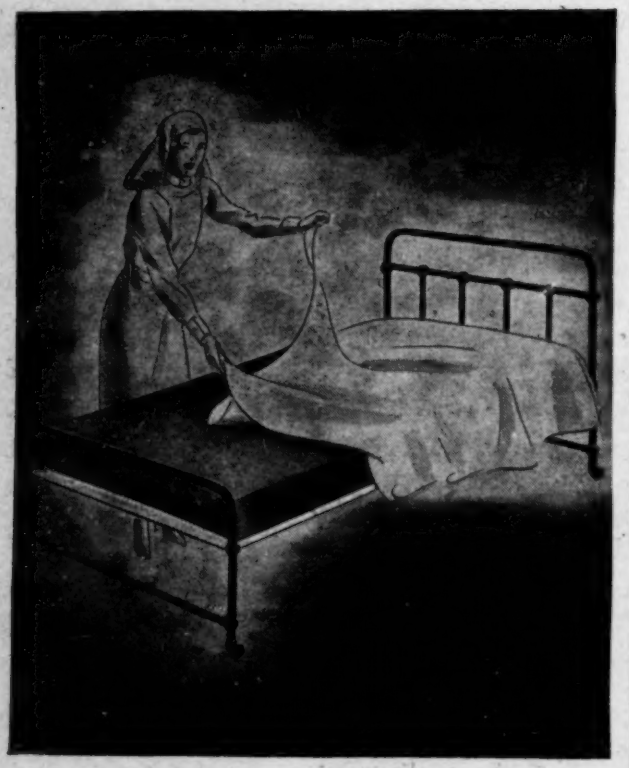

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 16 1944

SMALLPOX VACCINATION BY THE MULTIPLE-PRESSURE METHOD

BY

H. J. PARISH, M.D., M.R.C.P.Ed., D.P.H.

Wellcome Physiological Research Laboratories, Beckenham, Kent

During the smallpox epidemic in Scotland in 1942 (MacGregor and Peters, 1942; Sutherland, 1943) some members of the staff of the Wellcome Laboratories asked to be vaccinated as a precautionary measure in case the epidemic should spread south. It was decided to offer to the whole staff vaccination by the multiple-pressure or multiple-puncture method. This is the technique of choice in the U.S.A., but has never been adopted in Great Britain; a perusal of the literature has revealed no completely satisfactory explanation for the differences in procedure in these two countries.

Technique

Multiple-pressure Method (see Leake, 1930a, 1930b; Kolmer and Tuft, 1941).—The site chosen was usually the left upper arm over the deltoid muscle, but a few women elected to be vaccinated on the lower thigh. The skin was swabbed gently with acetone, following American practice, care being taken not to rub so vigorously as to damage the epidermis and thus encourage the development of secondary vaccinial vesicles. A very small drop of lymph was placed on the cleansed area with a glass rod, and "pressures" were applied to the skin through the drop with the side of the point of a Hagedorn needle. The needle was moved rapidly up and down with enough force to demonstrate the elasticity of the skin but not so vigorously as to draw blood. (A few hours after the operation there was no visible lesion.) In accordance with American writers' recommendation for the vaccination of adults, 5 to 10 pressures were used for primary vaccinations and 30 pressures for secondary vaccinations; 30 pressures are recommended for primary vaccinations of young babies because they are less prone to reaction than adults. The area covered by the pressures was only 1/8 in. in diameter. After vaccination any excess of lymph was removed gently with a pledget of cotton-wool. No dressing was applied.

Scratch Method.—This technique is only referred to briefly by way of contrast with the multiple-pressure method. The usual recommendation in this country is a superficial scratch, 1/8 in. in length. Parallel scratches are regarded as unnecessary by American workers (Kolmer and Tuft, 1941); nevertheless, the public health authorities of Glasgow, in their anxiety for efficient vaccination during the large epidemic of smallpox in 1942, advised three parallel scratches, 3/8 in. long and 1/8 in. apart (MacGregor and Peters, 1942). The usual method in Great Britain was formerly "cross-hatching" (scratches crossing one another), but reactions tended to be unduly severe, and it was given up. It is legally prohibited in Germany.

Intradermal Method.—Since it is obviously undesirable to inject intradermally any contaminated fluid, this method is unsuitable for ordinary glycerin-cured lymph, which does unfortunately contain living bacteria. (The Therapeutic Substances Orders, dated Oct. 21, 1942, and Feb. 11, 1944, permit the issue of vaccine lymph containing not more than 20,000 living bacteria and other visible micro-organisms in each c.cm., provided tests for *Cl. tetani* and beta haemolytic streptococci are negative. Glycerin is added to vaccine lymph in normal times in this country to keep down the bacterial content; in the U.S.A. brilliant green is added in addition.) The intradermal route should be very satisfactory, however, for culture virus, since an exact volume of virus suspension, without extraneous bacteria, would be injected into each patient. The multiple-pressure method appears to be preferred in America, since it is claimed that the percentage of "takes" is just as high, additional advantages being simplicity and painlessness during performance.

Advantages of the Multiple-pressure Method

The multiple-pressure method is regarded as better than the scratch method for the following reasons: (1) Reactions are less severe and less painful. Scars are smaller. (American authorities are at variance with the Report of the Ministry of Health (1928), for they place little reliance on the area of scar formation as an indication of the degree of immunity. They claim that there is no evidence that the duration of immunity is less with the multiple-pressure method than with other methods.) (2) The technique is more rapid, the whole operation taking about 10 seconds; this assertion of greater speed is doubted, however, by experts in the scratch method. (3) The epidermis is left nearly intact and there is no bleeding—in contrast with the general "messiness" of the scratch method, especially when the latter is inexpertly performed. The risk of septic infection is thus eliminated. (4) The multiple-pressure method obviates the use of any control site for estimating the degree of trauma in the so-called "immune" reaction (immediate reaction). This is a doubtful advantage, since many experts, including Marsden (personal communication), never use any form of control as part of the scratch technique; if no specific reaction is obtained the subject is not regarded as immune until the inoculation has been repeated with lymph of proved potency and the same result obtained. (5) Since excess vaccine lymph is wiped off gently and there is minimal trauma, the immediate application of a dressing is unnecessary (Leake, 1930a, 1930b). I am inclined to doubt this assertion, however, because some patients in my series infected their fingers by touching the primary lesion and developed secondary lesions at other sites; a protective dressing would have prevented this accident. The case for and against a dressing is well discussed by Stimson (1936). Marsden (1942), who uses the scratch method, recommends a simple dry dressing fixed by strips of elastoplast.

Potency of Vaccine Lymph

Only if the potency of the lymph is suspect or if there has been exposure to smallpox do the Americans deviate from the above simple technique. Multiple vaccinations—30 pressures at more than one site—are then advised in order to obtain more "takes." (It will be remembered that the practice during the recent Glasgow outbreak was also modified to obtain more "takes"—viz., vaccination by multiple scratches instead of the usual single-scratch technique.)

The Regulations for the potency of vaccine lymph laid down under the Therapeutic Substances Act may require revision in the light of further advances in our knowledge and

experience. The use of a standard lymph, preferably a dried preparation, would be advantageous, and it might also be feasible to stipulate an upper limit of potency in addition to the lower limit now enforced. The issue of a more stable product is desirable. So long as wet lymph is issued, undesirable and rapid deterioration is inevitable unless the tubes are kept continuously at a temperature below 0° C. The practitioner often keeps vaccine lymph in a drawer at room temperature, and as time elapses his proportion of "failures" may be unduly high. This may explain the official preference in this country for the scratch method, which may be more "drastic," as generally performed, than the American multiple-pressure method. Evidence should be collected to settle this point. (It may also explain the experience of Goodall (1942) of a somewhat higher successful reaction rate among those cases in which blood was drawn than among those in which bleeding did not occur. Immediately after this statement in the abstract of Goodall's paper in the *Bulletin of Hygiene* was the reviewer's comment: "It should be realized, however, that the latter group would include any cases in which the *incision was too superficial for success—a not uncommon cause of failure.*" Both the above statements seem strangely at variance with American experience with the multiple-pressure method, where damage to the skin is trivial.) The findings of Rivers, Ward, and Baird (1939) clearly show that the potency of a vaccine lymph used for revaccination makes a decided difference to the numbers of persons who show incomplete protection against smallpox. A highly potent lymph *at the time of use* is of primary importance whatever technique is adopted.

Reactions of some severity are to be expected in association with successful first vaccinations, more particularly in adults.

Reactions correlated with Degree of Immunity

Reactions may conveniently be classified in three categories which represent for practical purposes three grades of immunity. (1) If the patient has no immunity, or very little, he will develop a "typical" reaction, the so-called primary "take" or vaccinia. This is represented by a papule developing in 3 to 4 days, followed by a vesicle which is at its maximum in 9 to 10 days, followed in turn by a pustule and a scab which separates about the 31st day. Occasionally, in persons with no immunity, the reaction is more severe and of longer duration. In all cases there is some degree of associated adenitis. Constitutional upset with rise of temperature is invariable, and sometimes necessitates absence from work and rest in bed. (2) When there is partial immunity an accelerated or vaccinoid reaction may be expected, sometimes referred to as secondary vaccinia. Here the reaction is less severe, all the changes being speeded up and the maximum vesicle formation occurring in 4 to 7 days. Finally, (3) the typical response in a person who is highly immune is an immune or immediate reaction, characterized by papule formation reaching its maximum in 8 to 72 hours and seldom going on to vesiculation. The American writers state that if no reaction occurs the lymph should be regarded as suspect and the test repeated; in the present series it was found that some of the "no reactions" reported were really "immune reactions" which the patient had failed to observe or had ignored on account of their triviality and short duration. An additional control of the potency of the vaccine lymph used for such patients, if this were needed, was furnished by the numerous relatively severe reactions observed after vaccinations which were performed at the same time with the same batch of lymph. American authors also mention that a rough criterion of a fully potent lymph is that it should give more than 50% of vaccinoid reactions in a group of persons vaccinated more than 10 years previously; this percentage figure was exceeded by a considerable margin in our group.

Marsden (personal communication) does not accept the immediate or immune reaction, which he regards as a misnomer; it does not indicate immunity, he believes, but merely sensitization to lymph. To quote his paper (Marsden, 1942): "Nothing less than a red deep-seated indurated swelling beneath the seat of inoculation, developing about the third day and subsiding gradually, should be accepted as a specific reaction; and when the revaccination has been performed in the face of smallpox infection, or if the interval since the primary vaccination has been considerable, the process should be repeated at least once. Under similar circumstances, if no specific reaction be obtained the subject should not be regarded as immune until the inoculation has been twice repeated with lymph whose potency is proved by its effect on other patients."

Henderson and McClean (1939) produced evidence that, in a susceptible person, vesiculation must occur before vaccination can be regarded as successful. They inoculated volunteers intradermally and subcutaneously with a specially purified vaccine lymph, and found that immunity to subsequent vaccination by scarification was obtained with certainty only if there was vesiculation at the site of the primary vaccination.

Results of Vaccination on 214 Persons

The results obtained with the laboratory staff were analysed with reference to the type of reaction which developed and the history of previous vaccinations (Table I).

TABLE I.—*Vaccination of 214 Adults*

Previous Vaccinations*	Reactions					Total
	Nil	Immune or Immediate	Accelerated or Vaccinoid	Typical or "Primary"		
				Moderate	Severe	
None	0	1	13	33	15	62
One	11	6	70	23	4	114
More than one	2	15	16	3	2	38
Total ..	13	22	99	59	21	214

* Based on patients' histories, which were supplemented in most instances by direct evidence from scars.

The information about previous vaccination depended mainly on the patients' statements, which could not always be confirmed by inspection of scar sites; the original notes had sometimes to be revised, therefore, after further discussion. Again the severity of reactions observed in the present investigation did not always fit precisely under any of the headings in the table. The 13 reactions which are listed as accelerated or vaccinoid, in the group of patients who stated they had never been vaccinated previously, could almost all have been classified, in retrospect, as moderate "typical" or "primary" and transferred to the next column in the table; the majority of these reactions were intermediate between "accelerated" and "typical." Intermediate grades are to be expected in any study of biological reactions, but a more elaborate and cumbersome classification appeared inadvisable. At all events, the figures in the table give a reasonably accurate analysis of the available data.

The main feature of the table is the decreasing severity of reactions, depending on the frequency of previous vaccination. There were many more severe reactions in persons vaccinated for the first time than in the other two groups. The majority of persons who had never been vaccinated before gave moderate or severe "typical" or "primary" reactions, and persons who had been vaccinated more than once before gave "immune" and "accelerated" reactions in approximately equal proportions. One person who had never been vaccinated before gave an "immune" reaction on repeating the inoculation; there is no obvious explanation of this unexpected result.

In a further analysis it was seen that sex (79 males and 135 females) had apparently no influence *per se* on the grading of the reactions observed. Stout persons tended to have more severe reactions than thin.

The degree of reaction in relation to one or more previous vaccinations was further analysed with regard to the time which had elapsed since the *last* "successful" vaccination (Table II). Fewer persons gave "immune" reactions when the interval which had elapsed was long. In the "over 30 years" group there were many "typical" or "primary" reactions, mostly of moderate severity. It is noteworthy, too, that two persons who had been vaccinated 10 to 20 years previously gave reactions classified as severe; these were women who elected to be vaccinated on the thigh and reacted so severely that they had to be off work for some weeks. More severe reactions appear to be associated with thigh than with arm vaccinations (Buchanan and Laidlaw, 1942), and we agree with certain other workers that the thigh is an unsuitable site and should rarely

be employed. At the foot of Table II are given for comparison the data of reactions occurring among persons with no previous vaccination.

TABLE II.—*Degree of Reaction in Relation to One or More Previous Vaccinations (Males and Females)*

Years Since *Last* "Successful" Vaccination	Reactions					Total
	Nil	Immune or Immediate	Accelerated or Vaccinoid	Typical or "Primary"		
				Moderate	Severe	
Less than 5 ..		1				1
5–10	2	2	1	1		6
10–20	6	13	41	4	2*	66
20–30	3	4	24	6	1	38
More than 30	2	1	20	15	3	41
Total ..	13 (8·6%)	21 (13·8%)	86 (56·6%)	26 (17·1%)	6 (3·9%)	152
Cf. No Previous Vaccination:						
Total ..	0	1 (1·6%)	13 (21·0%)	33 (53·2%)	15 (24·2%)	62

* Women with thigh vaccinations.

Abnormal Reactions, Complications, etc.

(*a*) In two cases the reaction did not appear till the 10th and 12th days respectively after vaccination. The patients believed they were immune, but they did in fact develop a moderate and a severe reaction respectively. It is not known why there should have been an unusually long delay in the incubation period of these persons who had little or no immunity. (The statement has been made that "if a reaction is not found on the second or sixth day the vaccination must be repeated, as *either the virus was impotent or the technique was at fault*" (Gloyne, 1943). Apparently the reasons given for repetition do not invariably hold, as is shown by our experience, and also since, on occasion, primary and "repeat" vaccinations have both shown typical "takes" developing possibly after different time intervals (Anderson, personal communication).)

(*b*) In seven subjects "supernumerary" vesicles developed around the vaccination site.

(*c*) Three persons developed so-called "vaccinial rashes," which were papular and pustular and of scanty distribution, and not to be confused with generalized vaccinia—a much more serious condition (Jubb, 1943). In our series there were no cases of generalized vaccinia and no encephalomyelitis.

(*d*) There were four cases of auto-inoculation or auto-vaccination. The first patient had complained of a "stiff neck," which was explained by a typical lesion of the scalp with an associated adenitis at the back of the neck. The second patient had single lesions of neck, finger, buttock, and thigh; the third, two lesions of the cheeks and one of the left arm; and the fourth, single lesions of elbow and leg and three lesions on the body. The somewhat high incidence of subsidiary lesions in this series may possibly be explained by the natural interest of laboratory workers in a new method and their desire to follow carefully all stages in the development of their vaccinia. The lesions, as a rule, were not protected by any form of dressing, and were certainly palpated by some persons.

(*e*) A patient who had been vaccinated on the thigh and developed a severe reaction infected her daughter, aged 19. The daughter developed a typical primary lesion of the thigh, with associated adenitis. Mother and daughter had had baths on successive nights and used the same bath towel. It was a family joke that the daughter always used a scrubbing-brush in her bath and rubbed herself down so vigorously afterwards that her skin was reddened; this may serve to explain her vaccination via the bath towel! (A local medical practitioner who heard of this accident told me that his father had infected his own nose after vaccinating a child and had to be away from his practice for several weeks.)

(*f*) Two patients developed boils and had successive crops for many weeks, and one patient had a neuritis of forearm and hand which lasted about 48 hours and cleared spontaneously. Both conditions were probably coincidental, although the patients tended to blame the vaccination.

Discussion

The multiple-pressure method of vaccination is an innovation in this country, and aroused considerable interest among the staff, who were impressed by its apparent simplicity and painlessness at the time of performance. There was therefore no difficulty in obtaining volunteers, although some persons may have regretted their enthusiasm when severe reactions developed. It is fortunate, perhaps, that the multiple-pressure method was used, as even more severe vaccinial reactions might have followed scratch methods, with the added possibility of septic infection. A factor in the severity may have been "green lymph"—i.e., lymph issued and used soon after preparation, and kept, as in our experiment, in cold storage until required for use. The worst sufferers were certain persons who were being vaccinated for the first time in adult life or revaccinated after the lapse of many years. The remedy is therefore primary vaccination in infancy, followed by periodic revaccination throughout life. A sore arm and disturbance of health necessitating absence from work are thus obviated. (American practice is to carry out primary vaccination in the first year of life, and revaccination at 5 or 6 years and again when puberty is reached. In the American Services further vaccinations are performed yearly; there is little trouble from reactions.)

Some of the instances of spread from the original site to other parts of the body, and in one instance to another individual, would seem to indicate that warning should be given to the patient and his relatives of the highly infectious nature of vaccine lymph. The usual American procedure is to dispense with any form of protective dressing, but the wisdom of this recommendation is questionable. The risk of autovaccination is by no means negligible, and subsidiary lesions may lead to permanent disfigurement. These risks apply to vaccination by any method and not by the multiple-pressure method alone.

I have also been informed of doctors developing lesions from applying their lips to vaccine capillary tubes to blow out the lymph. Here again a word of warning is necessary, and some other method of expelling the lymph—e.g., the use of a special rubber teat—is essential.

It is disturbing that a significant number of soldiers in this war who have been vaccinated at home and found to be negative have developed typical "takes" when revaccinated over-seas. The explanation may be poor-quality lymph at the first vaccination or bad technique, or both. Although the scratch method was implicated in these observations, at least an equal number of "discrepancies" might be expected with the multiple-pressure method. Whatever method of vaccination is adopted the only safe working rule is to disregard all histories of previous vaccination that are not supported by direct evidence. As already quoted, Marsden (1942) stresses the necessity for a sceptical attitude towards a negative or an "immune" reaction in the face of a smallpox epidemic or if a considerable interval has elapsed since the primary vaccination. Two repeat vaccinations may be indicated with lymph which is of assured potency on the basis of tests on other patients.

The difficulty of obtaining an accurate record of previous vaccinations has already been mentioned. In cross-examination it was ascertained that some persons had obviously confused vaccination against smallpox with inoculations of diphtheria prophylactic. It would be extremely useful if some form of health record could be devised which would accompany each patient and give accurate information of all inoculations (date, preparations, and batch number, dose, degree of reaction, etc.) and of infectious diseases and other illnesses. "One more card to be lost!" was the abrupt comment of one well-known fever hospital superintendent when this idea was discussed; but if this serious defect in the scheme could be circumvented more reliable vaccination histories would be obtainable for consideration alongside the direct visual evidence provided by scars.

Summary

The multiple-pressure method was used for vaccinating 214 members of the laboratory staff.

The advantages of this method, which is in common use in the U.S.A., are discussed.

The potency of calf lymph before issue is controlled by official regulations, but storage under suitable conditions is requisite if

results are to be satisfactory. Whatever method of vaccination is adopted, lymph must be highly potent *at the time of use*.

The necessity for obtaining direct *evidence* of a successful "take" is stressed. Unless only a short interval has elapsed since a satisfactory primary vaccination, a negative or "immune" reaction on revaccination should be distrusted until confirmed. Two reinoculations with lymph of proved potency may be necessary before this finding is accepted.

There is insufficient appreciation of the highly infectious nature of vaccine lymph. A dressing should always be applied immediately to the site of vaccination to reduce risks of auto-inoculation.

Severe reactions necessitating absence from work would be obviated if vaccination in infancy and periodic revaccination were the general rule.

Some system of permanent health records which would accompany each patient is desirable. Full details of vaccinations and other inoculations, including reactions, would be entered and would supplement the direct evidence presented by vaccinial scars.

I have to thank Dr. J. Pickford Marsden, River Hospitals, L.C.C., for his helpful advice while this paper was being prepared for publication.

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A TWO-STAGE METHOD OF TREATMENT IN DIABETES

BY

R. H. MICKS, M.D., F.R.C.P.I.

Physician, Sir Patrick Dun's Hospital, Dublin

This communication describes a simple method of carrying out adjustments of insulin dosage or diet (or both) in those diabetics for whom a change of some sort is obviously necessary. It is particularly applicable to the patient who is ambulant or under treatment in his own home.

It is described as a two-stage method of treatment because its first object is the restoration of the patient to vigorous health by insulin without any restriction in diet other than the close spacing of meals which prevents hypoglycaemic attacks. During this stage no attempt is made to maintain normal levels of blood sugar or a sugar-free urine, and the dose of insulin is controlled by daily observation of the patient's body weight and the record of the volume of urine passed. When normal weight has been reached and maintained for some time on a constant dose of insulin, then the secondary object of diabetic treatment—namely, the lowering of the blood-sugar levels to near normal—can be tackled (if it is thought well to do so), and the effect of carbohydrate restriction observed.

The method may be summarized in a few words: the patient is restored rapidly to health and vigour by insulin on a diet which is more than adequate, the question of blood-sugar levels being left over to a later date; diet charts and blood-sugar estimations are not needed for the first stage, though they are necessary for the second.

Advantages of the Two-stage Method

A two-stage method of treatment (though applicable to hospital work, and in fact used in my own hospital practice) is not needed by the experienced diabetic specialist who has his patient in hospital, who can have frequent blood-sugar estimations carried out, and who can make certain that the patient takes a prescribed diet. For it is possible for a physician so placed to roll both stages into one, and combine his most important duty (the discovery of how much insulin is needed, and how often) with the much less important one of controlling hyperglycaemia by a rationed diet. But it offers very definite advantages to physicians who have to carry out adjustments for the already instructed diabetic outside hospital. For them it is a "safety play" which enables them to restore a slightly maladjusted diabetic to effective health as rapidly as possible, leaving to a later date the question of exact dietetic control. It enables them to use insulin freely without fear of hypoglycaemic attacks. If at a later stage they decide to tackle the question of dietetic restriction, they will then be in the happy position of knowing that if these restrictions bring about hypoglycaemia the fault lies with the diet being too low, and not with the insulin dosage being too high.

Not the least of the advantages of the two-stage method is that the patient himself becames correctly oriented towards his disease. He learns that his restored health is due to injecting insulin, and not to abstaining from carbohydrate. He learns that loss of weight, thirst, and polyuria (the cardinal symptoms of diabetes) are signs of underdosage with insulin and must be noted and reported whenever they occur. Too many diabetics imagine that the only yardstick whereby they can measure their health is a sugar test on the urine, and fail to learn the far more important lesson that the adequately treated diabetic should so live that he is free from all the symptoms of his disease.

The First Stage

During this stage the physician's only concern is to restore the patient to full health. He allows the patient to satisfy his appetite so that wasted tissues may be built up and hypoglycaemia avoided; he gives enough insulin often enough to keep the urinary output as near normal as possible and to produce a steady *daily* gain in weight. If he fears hypoglycaemia—for example, at night—he does not let that stop him from increasing the dose of insulin, but he takes the precaution of ordering glucose at the appropriate periods. The rationale is the same as that of most specific replacement therapies: make sure that enough is given. Prophylactic glucose enables this to be done without risk.

Insulin.—Unmodified (soluble) insulin should always be used in even minor diabetic relapses. Except in cases of coma and threatened coma (which should be rushed into hospital), doses of about 30 units twice daily, with a small evening dose, will be adequate in many instances and entail little risk of hypoglycaemia during the first few days, but there is of course no general rule. If a marked improvement does not set in on a dosage not very much higher than the patient's usual maintenance dose, the physician should suspect that coma may be nearer than he at first thought.

Diet.—The two essentials are that it shall be adequate and contain small meals interpolated between the chief meals of the day, with additional glucose whenever a hypoglycaemic attack is to be feared. Occasionally an overconscientious diabetic who has relapsed through cutting down his total intake to near the point of undernutrition will be afraid to increase his diet, but such patients will usually take glucose without any dark suspicions about their doctor's intelligence. It must never be forgotten that the diabetic who cannot eat or who vomits is a candidate for coma, and therefore a case for hospital.

Weighing.—Daily weighing of the patient is essential, and home treatment must not be undertaken without scales in the house If diet is more than adequate and the weight does not rise, then insulin dosage is too low, and a polyuria will indicate the period or periods of the day at which it is inadequate. If the weight refuses to rise, and the diet is adequate and there is no polyuria, then the cause of the loss of weight is not simply diabetes; there must be some concomitant disease—for example, tuberculosis or gall-bladder disease.

Urine Measurement.—The patient should record the time and approximate volume whenever he passes urine. Measurement need not be done with great accuracy (a half-pint milk-bottle marked with stamp-paper may be used), and the ambulant patient can make a rough guess if he passes water away from home. There is no constant figure for all diabetics, but, apart from a few puzzling exceptions, the 24-hour output can usually quickly be reduced to within or about 50 oz. Adequate insulin dosage in a previously inadequately treated patient will always markedly lower the urinary output. If the urinary output during the night is relatively high, that points to the need for a bedtime dose of insulin.

Testing for Sugar.—Testing the urine for sugar should be done during the first stage only with the object of avoiding hypoglycaemia.

Ketones.—If a decrease in the degree of ketonuria (if present) does not take place a few hours after the first injection of insulin it is probable that the case is more serious than at first appeared. If the physician has not got the reagents for Rothera's test he should assume that a copious pale urine implies ketosis, and that, if a single reasonable dose of insulin does not produce a scantier yellow urine, then the ketosis is severe and the patient not very far from coma.

Previously Untreated Diabetics.—These cases should always be in hospital until a thorough survey of their general health has been made and they have learned about hypoglycaemia. But they can be discharged at an early date, and the study of their insulin requirements can be continued at home.

Minor Relapses.—The two-stage treatment is the quickest way of overcoming a minor relapse without disturbing the patient in his employment. It is usually essential for quick recovery that the patient, if on a modified insulin, should return for the time to the unmodified.

The Second Stage

Restriction of the carbohydrate or other constituents of the diet can be most easily carried out after the patient's return to normal weight and vigorous health. It should not be attempted till he has been for some weeks on an unvarying dose of insulin; for it is commonly found that soon after a severe relapse or an attack of coma the dose of insulin required to maintain a steady rise in weight begins to decrease till it settles down usually at about what it was before the relapse. Till then the patient probably needs more food than normal; attempts to restrict his intake may delay his return to normal health, and, by producing hypoglycaemic attacks, tempt his doctor to premature reduction of the insulin dosage.

In most patients who are on an unmeasured diet the blood-sugar levels are higher than normal. The majority of writers on diabetes teach, perhaps correctly, that any avoidable degree of hyperglycaemia is harmful; others, including myself (Micks, 1943), can see no proof of this, and suspend judgment. All writers agree that in some cases normal blood-sugar levels can be maintained only at the cost of frequent hypoglycaemic attacks.

So, if it is decided that the attempt should be made to control the patient's blood sugar by a rationed diet, it must be understood in advance that in some cases it will be defeated by hypoglycaemic attacks, and in other cases the patient may refuse to co-operate, or the nature of his employment may make the attempt a failure—for example, when it entails irregular spells of violent exercise.

There are three important points about the management of the second stage. The first is that it can be carried out only with the help of frequent blood-sugar estimations as well as diet charts. The second is that hypoglycaemic attacks in an ambulant diabetic are a serious matter. The diabetic should be taught to look upon them as a crime and not as an inevitable occasional mishap. The third is that, if cutting down the carbohydrate intake produces hypoglycaemia, this must be corrected by restoration of the cut, not by reduction of the dose of insulin. Or, at least, if a cut in insulin is made with the object of preventing hypoglycaemia occasioned by a reduction in diet, then the patient must watch his weight and urinary output; if the weight falls and the urinary output rises he should be put back on to his old dose of insulin and a larger diet.

In some patients, especially those leading a sedentary life, it will be found that the food intake (without any deliberate attempt to control it) is in fact constant from day to day, and the carbohydrate intake not so high as to produce a significant hyperglycaemia. In such cases the question of rationing the diet does not arise.

The following general advice may be given to physicians who consider attempting this second stage of "fine adjustment":

Do not generalize. Consider each case individually. Do not attempt it without blood-sugar estimations. Do not set the patient testing his own urine and cutting down his own diet without blood-sugar controls. Think carefully before persuading the patient to adopt any way of life which makes him less healthy. Look on hypoglycaemic attacks as a reproach both to the patient and to yourself.

Coma and Threatened Coma

The treatment of coma is an entirely different matter from correcting relapses unaccompanied by coma or maintaining the diabetic in health. Insulin must be given, sometimes in very large amounts, not by any rule but just as an anaesthetist gives an anaesthetic—that is, until it has begun to work. Intravenous saline, too, in large quantities is often needed to correct dehydration and sodium depletion. So coma cases should always be brought at once to hospital; for many cases which are saved by the work of the full "team" of a modern hospital could not be saved by a physician, however skilful, working single-handed in the patient's home. Quite apart from stocks, instruments, and laboratory facilities, at least four pairs of hands are usually needed. But, nevertheless, treatment should always be started the moment the case is seen, and 40 units given, if necessary every 15 minutes, until either a marked improvement begins or the patient reaches hospital. There is no risk of hypoglycaemia during the first few hours of the treatment of coma, and it would probably be correct to say that the risk of hypoglycaemia does not begin until after clinical improvement has set in.

Acute Non-diabetic Complications

Acute illnesses in the diabetic (for example, acute infections and conditions calling for operation) should be treated in hospital on account of the risk of coma supervening, the disturbance of the patient's nutrition, and the need for an increased dosage of insulin as well as for parenteral administration of fluid. But such cases have sometimes to be admitted to a hospital to which no medical specialist familiar with diabetes is attached. When confronted with such an emergency even a surgeon may succeed in keeping a diabetic out of coma if he acts on the rule, "Plenty of insulin, plenty of glucose, and plenty of saline."

In acute complications it is obvious that the adequacy of treatment cannot be controlled by weighing, and Rothera's test becomes of prime importance, for the output of urine cannot be used as a control for insulin dosage. There are two reasons why no attempt should be made to reduce the urinary output in acute infections and in operation cases. The first is the ever-present danger of dehydration; the second is the risk of crystalluria if sulphonamides are being administered.

To the non-specialist concerned with maintaining a diabetic in health throughout an acute infection or a surgical operation and after-treatment (conditions in all of which the patient is threatened with dehydration from the non-diabetic illness as well as with dehydration and coma from the diabetes) the following rough rule is offered: *Maintain a more than adequate water and sodium intake, give enough insulin often enough to keep Rothera's test negative, and give enough glucose to prevent the urine from becoming sugar-free.*

Shifts

Shifts from unmodified insulin to modified types such as globin (which I have found very satisfactory in a number of my milder cases) or protamine-zinc-insulin or mixtures can be very simply managed without putting the patient in hospital. The daily weight chart shows whether the dose of the new insulin is inadequate, and the urinary volume record shows during what period of the 24 hours the insulin effect is lacking. It is of course essential to make sure, by preliminary observation, that the patient before the shift was receiving an adequate dose of unmodified insulin. Sometimes it will prove impossible to shift the patient on to a one-shot treatment without hypoglycaemia, and the attempt has to be abandoned. It is to be hoped that some of the standardized mixtures of unmodified and modified insulins now undergoing trial will make it possible to free all patients from the trouble of two or more daily injections.

Theoretical Considerations and Fallacies

Experimental work has yielded little knowledge that is of help in the treatment of diabetes, for it has propounded new riddles instead of solving the old ones. But, as discussions with colleagues have shown that reluctance to try individual treatments in diabetes is often based on mistaken notions, it is well to consider how much is known about diabetes in man.

The Nature of Diabetes.—The treatment of diabetes is not based upon exact knowledge of its pathology or of the mode of action of the specific remedy. Diabetes takes numerous forms, and it would perhaps be well to refer (as has been suggested) not to "diabetes" but to "the diabetes," using the plural, just as it is now customary to write of "the epilepsies" rather than of "epilepsy." In the young it is nearly always "severe" in the sense that a high dose of insulin must be given and its action maintained during the greater part of the 24 hours, while in the old it is often mild. But, on the other hand, some young diabetics can lead an active life on so little as 20 units a day, while occasionally, even in the old, several hundred units a day may be required.

Diabetes often exists by itself, but in some cases it may be associated with disease of the liver, of endocrine organs other than the pancreas, of the vascular system, or of the central nervous system, and it may be impossible to decide whether the relationship is a causal one. The disease may change in "severity" from time to time for no apparent reason.

The Action of Insulin.—The action of insulin, especially in relation to the secretion of endocrine organs other than the pancreas, is imperfectly understood, but one thing seems certain: insulin does not "burn carbohydrate," for its most clearly demonstrable action is not concerned in the process by which carbohydrate is broken down to yield energy, but in that by which it is built up from glucose to glycogen. This point should be emphasized, for some textbooks still teach that insulin is "the spark which fires the glucose." No better illustration of how little is known of the mechanism of insulin action can be given than the experiment in which anterior pituitary lobe ablation is performed on the pancreatectomized dog: the animal, which before pituitary ablation was severely diabetic and could be kept alive only by insulin, can after the operation be kept alive without insulin. That is to say, insulin is apparently not essential for maintaining life in a hypophysectomized dog; for, if such an animal is sacrificed, no trace of insulin can be found in its tissues anywhere.

In practice in man the dose of insulin required to maintain the patient in health varies from case to case and sometimes from time to time, but in any individual patient the dose necessary to maintain him in health is independent of the carbohydrate intake.

The practising physician need know one thing only about insulin—that it is a specific remedy for diabetes, and will *always* cure diabetic coma and will *always* maintain the diabetic in health except when the disease is complicated by other factors.

The Relationship of Diet to Diabetes.—Two things are certain. The first is that the diabetic cannot maintain vigorous health unless his intake (when deduction has been made for calories lost in the urine) is at least adequate for his metabolic requirements. The second is that if the diabetic has lost weight the diet must be more than adequate for his immediate needs, in that it must contain sufficient nutriment to rebuild wasted tissues.

It is not by any means certain that a more than adequate diet (resulting in a high blood sugar) is harmful to a diabetic who is taking enough insulin. There are theoretical grounds for believing that it may be so, but these are largely based on observations on patients and animals treated without insulin, and it is possibly fallacious to apply them to patients receiving doses of insulin which are approximately the same as the estimated normal output of the pancreas.

It is, however, certain that, provided insulin dosage is adequate, no immediate ill effects are seen as the result of a surplus intake of carbohydrate. Such uncontrolled patients do not suffer from periodic ill-health, do not have hypoglycaemic attacks (provided their meals are closely spaced), and do not tend to become fat; the uncontrolled patients in the younger age groups do not develop arteriosclerotic and degenerative complications, and it is doubtful whether the uncontrolled patients in the older age groups show an incidence of these complications higher than the controlled diabetics. It is of course possible that ill effects may follow a persistent hypoglycaemia, but if so they are remote.

Diabetic Complications.—There is no explanation of the occurrence of retinitis, cataract, arteritis, and peripheral neuritis in diabetics. It is possible that in the future it may be shown that the incidence of these changes may be lowered by some modification in the diet or by insisting that even mild diabetics should take insulin, but at present the reason for these complications is unknown. It seems certain that, once they have occurred, their course is not greatly affected by insulin or adjustment of diet.

Infection and Diabetes.—There is no evidence that a high blood-sugar level disposes the tissues towards infection; nor does clinical experience suggest that operations on diabetics are more commonly followed by infection than in non-diabetics. Diabetics suffering from infections respond just as well as non-diabetics to the appropriate antibacterial treatment, provided that adequate antidiabetic treatment is also given. The presence of severe infection in a diabetic often demands large doses of insulin to prevent or treat coma. When such large doses are given it is of course necessary to maintain a liberal carbohydrate intake if hypoglycaemic attacks are to be avoided. There need never be any hesitation in giving such cases plenty of glucose, for experience has shown that rapid recovery from serious infections can take place in spite of a persistently high blood-sugar level.

It is now generally accepted that diabetic gangrene is not a metabolic disorder due to high blood sugar, but simply the effect of arterial narrowing.

The Diagnosis of Coma.—A common misunderstanding is that the danger of threatened coma is measured by blood-sugar estimations or tests for ketonuria. It is of course true that in coma the blood sugar is always very high, and it is also true that a positive ketone test is a sure sign of a maladjusted patient and should receive serious attention. But the diagnosis of coma is a clinical diagnosis. The very thirsty diabetic is not far from coma, and as soon as any cerebral symptoms appear (the first is usually slight drowsiness) the patient should be treated as if in coma (according to the American usage of the term, he *is* in coma); when tachypnoea or signs of circulatory failure appear death may occur at any time if treatment is not started at once.

It cannot be too widely known that uncomplicated diabetic coma is curable so long as the patient remains alive; it never reaches an "irreversible stage" where even the most heroic treatment fails.

Summary and Conclusions

A two-stage method of making adjustments in insulin dosage or diet (or both) is described. It is specially useful when the patient is ambulant or under treatment in his own home.

It makes use of the observation that restoration to vigorous health may be attained by adequate dosage of insulin, an adequate mixed diet, and no dietetic control apart from the close spacing of meals which prevents hypoglycaemia.

During the first stage the physician's only object is to restore the patient to vigorous health by adequate dosage of insulin. He does not attempt to restrict the carbohydrate intake.

He assesses the adequacy of his dosage by the patient's daily gain in weight with the further aid of a record kept by the patient of the time urine is passed and the volume of urine. Blood-sugar estimations and diet charts are not needed at this stage.

The second stage can be begun when the patient has been restored to vigorous health and his insulin requirements have become stabilized. If this stage is undertaken diet charts and blood-sugar estimations are needed, for its object is the restriction of the carbohydrate intake in order to maintain low blood-sugar levels. Dietetic control is not always practicable, and it is possible that it is not necessary. By the two-stage method it becomes easier for the physician to separate those patients in whom dietetic control can be maintained (if decided upon) from those in whom it cannot.

Its chief advantages are that it enables major or minor changes in insulin dosage to be made with little fear of hypoglycaemia; it focuses the attention of both patient and doctor upon the primary object of diabetic treatment; it enables the doctor to consider dietetic control *after* restoration to health instead of imposing it as a preliminary.

The application of the method to the chief difficulties met with in general practice is discussed.

REFERENCE

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SOME ASPECTS OF GONORRHOEA IN THE NAVY

BY

STAFFORD MATTHEWS, M.B.
Surg. Lieut., R.N.Z.N.V.R.

AND

F. G. BEILBY, B.M.
Surg. Lieut., R.N.V.R.

In times of war—and this is especially so in combined operations—large numbers of men are often concentrated for a considerable period in one place where hospital and specialist facilities are not readily available. Under such conditions it becomes the responsibility of non-specialist unit medical officers to do all that is in their power to render venereal cases fit.

Our ship is a large parent vessel for various types of landing craft. We are frequently used as a base ship and, as such, are required to look after the health of the shore personnel if their medical facilities are inadequate, and often to act as medical guard for all and sundry vessels which may be in our vicinity. During the period under review we spent much time in areas abroad having a high incidence of V.D. It will be appreciated, therefore, that we have been afforded an opportunity of meeting what is, for the naval surgeon afloat, a veritable harvest of gonococcal victims. Here it might be pointed out that the gonococcus is an enemy of the Navy that has the courage to come out and fight at all times, and that we never underestimate its powers of destruction. It will also be appreciated that, owing to the shuttling of men to and from this ship, we are called upon to treat gonorrhoea at any stage of its course. That in itself is an unfortunate but at the same time unavoidable exigency of the Service, and as such is a burden we must accept. But—and this is the point—how much lighter the burden would be if these cases were accompanied by a full and accurate history!

It is our belief that more co-operation is needed in dealing with cases of gonorrhoea, and that much improvement in the results of treatment would ensue from the adoption of a more uniform system of recording the case history and from a critical inspection of one's own personal methods.

To illustrate the problem with which we are faced we quote an actual case history. This rating, who came to us on April 13, 1944, having been drafted from another ship, presented himself in the sick bay complaining of a urethral discharge. He said he had had some treatment. His medical case sheet gave the following cryptic report: "7/3/44: Urethral discharge noticed this a.m.; no inguinal adenitis; sulphapyridine routine commenced; forced fluids. 12/3/44: Slight discharge this morning; discontinue sulphonamides; irrigations b.d. 16/3/44: Dry; no complaints; discharged to duty. To report in one week's time."

At least the patient did arrive with a history card. All too often this is not forthcoming, and we have to rely on his own account to provide the essential data. It is our experience that the rating with gonorrhoea has a notoriously unreliable memory—often conveniently so—and his account of any treatment he may have received is frequently vague and meaningless.

History-taking

Primary emphasis is laid on the necessity for a standardized venereal case booklet similar to the Naval S.576, but with certain modifications. The Navy issue a special four-page card, each page measuring 5×8 in., headed "Venereal Case Card (other than Syphilis)," for recording cases of gonorrhoea and chancroid. Each page is divided into five columns, headed respectively Date, Local Treatment, General Treatment, Progress, Complications, and Treatment. The width of these columns may be appreciated by visualizing an 8-in. horizontal line divided into five parts.

It is argued that a card of this nature is inadequate for recording a case of gonorrhoea. We recommend that: (1) a booklet of some ten pages be issued (similar to the S.576S for syphilis); (2) no columns be provided with guiding headings except one at the left-hand margin for the date. It follows that every encouragement is afforded to the tabulation of nothing less than a full and relevant case history.

Venereologists have personal idiosyncrasies in their methods of recording a case history. They have, however, one thing in common—a routine, which they follow with each patient. Unfortunately it has been our experience that many doctors who are called upon to treat only occasional cases of gonorrhoea follow no routine, either in their examination or in the recording of their findings. All too often the history sheet has been a confession of laziness. We offer here a method of tabulation which has proved most satisfactory in our "clinic" in this ship. At the same time we do not claim that it is ideal from any point of view, be it conciseness, completeness, clarity, or therapeutic correctness. For us it affords a simple method of ascertaining and evaluating our therapy on any particular day. Further, by breeding this habit of routine tabulation one develops an instinctive awareness of essential data.

Date

27/6/44 Discharge:—Type, quantity, duration.
Other symptoms—e.g., dysuria, etc.
Previous V.D. history.
Previous sulphonamide therapy.
O.E.:—
E.g., Circumcision; hypospadias. SMEAR:—
URINALYSIS:—

TR.:—(Example only)
Peno-scrotal support. Forced fluids.
Mist. sod. cit. et sod. bic. ½ oz. (āā gr. xv) q.q.h.
Irrigations 1/8000 $KMnO_4$ b.d.
Tabs. sulphadiazine orally q.q.h. (21 gm.)

	Left	Right
Ing. glands	—	—
Epitr. ,,	—	—
Cervic. ,,	—	—
Rash		
Palatal cong. sgn.		

,, 3 : 2 : 2 : 3

28/6/44 ,, 2 : 2 : 2 : 2 — REACTION:—State of discharge; toxic effects. SMEAR:—

29/6/44 ,, 2 : 2 : 2 : 2 — REACTION:— SMEAR:—

30/6/44 ,, 2 : 2 : 2 : 2 — REACTION:— SMEAR:—

1/7/44 ,, 2 : 2 : 2 : 2 — REACTION:— SMEAR:—

2/7/44 P.R.:— REACTION:—

9/7/44 1st week test of cure — P.M. AND SMEAR:—

16/7/44 2nd week test of cure — P.M. AND SMEAR:—

23/7/44 3rd week test of cure — P.M. AND SMEAR:—

23/10/44 FINAL TEST OF CURE — P.M. AND SMEAR:— W.R.:— P.R.:— Cowper's glands— Prostate— Sem. vesicles—

G.F.T.:— Sounds:— Bladder lavage (1/8000 oxycyanide mercury)

1ST GL.	2ND GL.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CLEAR	BLOOD														
CLEAR	CLOUDY														
CLEAR	THREADS														
CLOUDY	CLOUDY														
CLOUDY	CLEAR														
HAZY	CLEAR														
THREADS	CLEAR														
CLEAR	CLEAR														

NOTE

1. Name, age, unit, and other data, including last three contacts and precautions taken, are recorded on the cover.
2. Results of smears, urinalysis, 2-glass test, W.R., and G.F.T. in *red ink*.
3. Relevant negative as well as positive data included.
4. Smear: performed only while discharge; not obtained by P.M. during sulphonamide therapy.
5. 2-glass test chart (after Pelouze).
6. Sulphonamide dosage noted clearly each day.
7. P.R. = Rectal examination—may be performed very gently in 2nd week
P.M. = Prostatic massage—not performed until about 3rd week (see text).
8. This outline is applicable only for non-complicated gonococcal anterior urethritis.

It will be noticed that we do not employ the symbols G.C., E.C., P.C., O.O., and +, widely used throughout the Services, to signify the presence and quantity of gonococci, epithelial cells, pus cells, and other organisms respectively. Let us suppose we receive a history sheet bearing the notation G.C.+, E.C.++, P.C.++, O.O.+++. We take this to denote that organisms with the morphology of the gonococcus were seen. But, because many other organisms (it is not stated whether they were Gram-positive or Gram-negative) were also present, we would like to know whether these Gram-negative diplococci were intra- or extra-cellular; for if they were extracellular and numerous Gram-positive organisms were present it would require the aid of a venereologist to ascertain whether or not they were gonococci.

The statement "P.C.++ and E.C.++" leaves much useful information unsaid, as it alludes only to the number of cells present and gives no indication of their size, type, or state of degeneration.

One of our sick-berth ratings has been specially trained in the carrying out of three procedures—the two-glass test, the Gram stain, and the irrigation technique. It is impossible to overstress the importance of the two-glass test. The simplicity of this procedure is obvious and its merit as a guide in a day-to-day study of the course of the disease indisputable. We are indebted to Pelouze for an invaluable routine method of graphing the results of the test, which we always place at the bottom of the first page of our records.

Below is a table showing the number of cases of urethral discharge which we have treated, listed under three simple headings; 76 of them were due to the gonococcus:

Total Cases	Non-specific Urethritis	Gonococcal Urethritis	
		Anterior	Posterior
93	17	49	27

Here we are not concerned with the non-venereal infection; nor would it be consistent with the theme of this paper to publish a detailed analysis of the venereal cases. The latter, however, do serve to illustrate the problems we have met.

The first of these is that, of the 76 cases of gonorrhoea, only 36 came to us with the history of a primary discharge of not more than three days' duration, whereas 40 gave one of the following histories: (1) discharge of more than 72 hours' duration; (2) relapse; (3) reinfection; (4) persistent discharge in spite of treatment. Secondly, of the cases in this latter group of 40, some came to us with no case notes, while the majority had inadequate histories. It was reasonable to expect that a large number of these cases would have infection of the posterior urethra, which indeed proved to be so. Individuals with such a complication are potential hospital patients, and it follows that they present the greatest difficulty in treatment.

How often we have wished that the Navy would state emphatically that cases in which the posterior urethra is considered to be infected are to be discharged to hospital! There is no doubt that this measure would considerably reduce the number of cases of the type discussed in this group. We appreciate the fact that it is not always possible to discharge such cases to hospital, and that there are few medical officers afloat who have sufficient experience and facilities to treat such cases on board, but for our purpose this small group need not be considered.

In the matter of treatment we make no plea for uniformity, but certain negations must be appreciated. Here the caution "Leave well alone" is often a timely warning where simplicity of therapy encourages meddling. We are of the opinion that on the one hand not enough use is made of existing facilities, admittedly often limited, while on the other there is a tendency to plunge into the realm of the venereologist. Do not let us be swept along with a flood of new therapies.

Here it might be of interest to mention some of the major pitfalls in the treatment of gonorrhoea that we have observed in following through our case histories.

1. The failure to appreciate the exact nature and extent of the pathological changes which have taken place, due often, it appears, to an inadequate knowledge of the detailed anatomy of the urethra and its adjacent structures.

2. The Dangers of Prostatic Massage.—There is a general appreciation that the prostatic tissue is involved in infections of the posterior urethra. Further, Lees and Lloyd have both shown that the administration of chemotherapy for gonorrhoea encourages an inflammatory response in the prostate. This is due to the inhibitory effect of the drug on the metabolism of the organisms, thereby allowing the tissue defences the maximum opportunity of destroying them. With this in mind it is obvious that digital irritation of the gland at this stage is contraindicated. We never carry out this procedure until seven days after the cessation of sulphonamide administration.

3. The Passage of Sounds.—An ill-timed prostatic massage can do enough damage; sounds can do a hundredfold more. Certainly, in experienced hands they are of established value, but in their indiscriminate use lies the danger of causing stricture, epididymo-orchitis, etc. Be it sufficient here to make one generalization: Never pass a sound if the gonococcus can be demonstrated; when performing a test of cure it is wise to wait until three weeks after the discharge has ceased before employing sounds.

4. Perseverance with Sulphonamide Drugs.—Medical officers frequently do not realize that a case that has failed to respond to two courses of a sulphonamide is unlikely to benefit from a third course of double the optimum dosage. All too often cases of gonorrhoea are flogged with course after course of sulphonamides.

5. Failure to Perform a Thorough Test of Cure.—It is sometimes impossible to discharge cases to hospital for urethroscopic examination or even for a Wassermann test. Nevertheless a reasonably satisfactory test of cure can and must be performed, particularly after an apparent "sulphonamide cure." If the medical officer is likely to lose sight of the case it should be impressed on the patient and his executive officer that complete tests of cure must be performed as soon as the opportunity arises.

Conclusion

It was our original intention to submit this communication to the Medical Director-General for publication in a Royal Naval medical journal. Had we done so we would have left unsatisfied a conviction that our plea might have had a wider appeal. Prominent in all our minds at the present time is the desire to do everything in our power to achieve unity and team-work in the profession. For others the war may well have passed the critical stage, but for us the outcome lies at this very moment in the balance. This paper is a plea in a limited sphere for a more co-operative attitude and a closer inspection of one's personal routine. By so doing, each individual one of us may feel that he is helping to turn the scales.

Summary

There is a need for greater co-operation and team-work in the management of cases of gonorrhoea.

Stress is laid on the importance of a comprehensive history sheet, and methods of tabulation are discussed.

Conclusions are drawn from 76 cases of gonorrhoea treated on board ship, and some common faults in therapy which have come to light are recorded.

We wish to acknowledge our indebtedness to the Medical Director-General of the Navy, Sir Sheldon Dudley, for permission to publish this communication.

TREATMENT OF WOUNDS BY DELAYED SUTURE

BY

WILLIAM PATRICK, M.B., F.R.C.S.Ed.

Lieut.-Colonel, R.A.M.C.(T.A.);
Lately Officer in Charge, Surgical Division, General Hospital, C.M.F.; Assistant Surgeon, Royal Infirmary, Glasgow

The initial operative treatment of soft-tissue wounds in conjunction with sulphonamide or penicillin therapy, and early secondary suture along with the technique of penicillin administration, are intended to prevent or minimize infection as well as to encourage early healing. In spite of these efforts in the forward areas, it is my experience that very many granulating wounds, some of considerable size, still reach the base hospitals with infection well established. Some time has usually elapsed since the injury, and these wounds are regarded as "old," but healing by granulation tissue should not be accepted as the inevitable outcome.

Part of our obligation is to obtain a soundly healed wound in the shortest time. This infected granulating type of wound takes weeks and sometimes months to heal if left to granulate, nor is it wise to attempt a secondary suture. In my opinion these wounds can be very easily treated by the "cure" of excision and suture, as opposed to the "prevention" of the early treatment, and it is on that account that this method has been investigated.

Operative Technique

This should consist of four phases: (1) control of infection and the preparation of the wound; (2) estimation of the optimum time for operation; (3) the practical details of the operation; and (4) the post-operative care of the wound.

1. *Control of Infection.*—If there is no infection in the wound no special pre-operative treatment is necessary. As a general

rule the degree of infection varies. In some cases no alteration in the ordinary routine treatment need be made: if the infection is resistant or fairly heavy a course of penicillin locally will be required to bring the wound into a state suitable for operation. It is very necessary in this late type of wound to have as low a degree of infectivity as possible before excision; the only certain estimation of non-infectivity is by bacteriological control. Contamination of the wound should be avoided by full precautions during dressings; rest in bed should be regarded as a necessary part of this phase.

2. *The Optimum Time.*—It should be said quite definitely that there is no fixed optimum time for this type of operation. One found, however, with the technique adopted, that better healing was obtained in older wounds, but, with satisfactory results from the suggested pre-operative treatment, the waiting period may be cut down considerably. Each wound can be assessed only by its clinical condition; the degree of infection determines the best time to operate.

3. *Operative Details.*—Practically all wounds can be done under a simple pentothal anaesthesia, followed by gas and oxygen if necessary; local infiltration is not recommended. The first essential is to adopt a complete surgical preparation as for any major operation and to avoid any tendency to skimp preparation. The technical steps are as follows:

(*a*) A clean and complete excision of the epithelial edges and all the granulation tissue down to and, if necessary, through the deep fascia. The correct axial direction for the excision will have been determined already by the initial operative treatment; this will be mainly longitudinal. A margin of 1/8 in., or at the most 1/4 in., will be sufficient to cut beyond the epithelial edge into normal skin; the ends of the incision must be very exact and allow the opposing skin edges to lie neatly in apposition. The length of the incision is of no consequence; the incision should be at a right-angle to the skin surface. This leaves a clean operation field exactly comparable to a planned operation incision, except for the possible gap in the deep fascia.

(*b*) The skin edges are next undercut and freely mobilized; this enables even a moderately wide gap to be sutured without tension—a point of great importance.

(*c*) Haemostasis should be as absolute as possible.

(*d*) The skin edges and the depth of the wound are now dusted with a fine "hoar-frost" covering of penicillin or a sulphonamide, alone or in combination.

(*e*) Any hole or gap in the deep fascia covering the underlying muscle should be carefully repaired; this, in my opinion, prevents the scar from becoming adherent.

(*f*) The wound is now carefully sutured. In most cases closure can be complete if one feels certain that all dead space has been obliterated; occasionally it may be safer to use a small fine drain from one end of the wound for 48 hours, or a small central "hole" may be left in the suture line.

(*g*) The completed suture line is given a final "hoar-frost" powdering, and a firm pressure-bandage is applied.

4. *Post-operative Care.*—To standardize this phase the drainage wick, if any, was removed after 48 hours. The first dressing was done on the 10th day, when the sutures were removed, the suture line again powdered, and a firm pressure-bandage reapplied. The second and third dressings were done on the 16th and 22nd days respectively, by which time healing was complete and the wound in a condition to stand up to rehabilitation. All dressings were carried out with aseptic precautions in the theatre. Wounds on the flexor surfaces of joints, of buttocks, and the back require careful post-operative supervision. The patient was confined to bed until healing of the wound was complete. A limb was always immobilized if necessary, to obtain rest. All cases of this nature were segregated in a "clean" ward.

Practical Features of the Investigation

A number of granulating wounds, practically all infected, were submitted to the strictly uniform operative detail described above. In order not to obscure the effectiveness of the operative part of the technique, no particular attention was paid in any way to pre-operative control of infection. No case was specially selected. A wound was decided, crudely perhaps, to be suitable for suture simply when it looked clean—there was no bacteriological control. The bacteriostatic agents employed were sulphanilamide, sulphathiazole, and penicillin (which was probably some months old: its strength was 5,000 units per gramme); three separate series of cases were treated, and each was given a different powder.

The success of the technique was judged entirely on the healing of the wound and any degree of infection which may have developed. It has been estimated on a percentage basis for tabulation as follows:

(i) Completely healed on 10th day without infection and remained healed subsequently .. 100%
(ii) Very minor stitch-hole infection: wound a little "grumbly" but dry and healed at 2nd dressing on 16th day 90%
(iii) Definite stitch-hole infection with some pus or discharge; perhaps slight wound-gap in places; but dry and healed on 22nd day 80%
(iv) Infection prolonged after 22nd day; some definite breakdown of suture line; likely to be some granulation 70%
(v) Failures; and generally poor or worse results than in previous group .. .. .. below 70%

Clinical Results of Method

Series 1.—This consisted of 10 cases. The bacteriostatic powder used was a mixture of penicillin and sulphanilamide in a proportion of 1 in 10. The wounds in this series were on the whole rather above the average size, and the time-interval between wounding and suturing was relatively long. (See Table I.) The results were quite satisfactory, 8 wounds out of 10 (80%) being completely healed within 3 weeks. One buttock wound was poor (it actually healed completely later on after a re-suture); one thigh wound (No. 8) collapsed completely without being infected (the edges and granulation tissue had not been excised, owing to the extent and depth of the wound, and therefore there was no framework on which reparative tissue could build). The penicillin–sulphanilamide

TABLE I.—*Series 1. Penicillin (5,000 units/g.) and Sulphanilamide: 1 in 10*

No.	Type of Missile	Details of Wound				Interval between Wounding and Suture (days)	Result %
		Location	Situation	Direction	Size (in.)		
1	Mortar	Buttock	Infero-lat.	Oblique	7×2½	18	100
2	HE	Calf	Postero-lat.	,,	6×1½	33	80
3	Mine	,,	Posterior	Longtdl.	6×½	38	100
4	HE	Thigh	Lateral	Angled	3×½	29	100
5	GSW (M-G)	,,	,,	Longtdl.	5×½	34	100
6	,,	Buttock	Posterior	Angled	5×1	34	70
7	HE	Arm	Lateral	Longtdl.	3×½	29	100
8	,,	Thigh	,,	,,	12×1½	42	Below 70
9	,,	Calf	Postero-lat.	Oblique	4×2½	75	80
10	,,	Thigh	Anterior	Transv.	2×1	17	90

TABLE II.—*Series 2. Penicillin (5,000 units/g.) and Sulphathiazole: 1 in 20*

No.	Type of Missile	Details of Wound				Interval between Wounding and Suture (days)	Result %
		Location	Situation	Direction	Size (in.)		
1	HE	Thigh	Posterior	Longtdl.	4 ×1	26	90
2	Mortar	Buttock	Inferior	Oblique	2 ×½	35	100
3	,,	Thigh	Ant.-lat.	,,	3 ×½	70	80
4	,,	,,	Anterior	Angled	2 ×1	34	80
5	,,	Buttock	Central	Transv.	1½×½	34	100
6	Bomb	Hip	Lateral	Longtdl.	2 ×½	31	100
7	HE	Calf	Medial	,,	3½×½	29	100
8	,,	,,	Lateral	,,	4½×1	29	100
9	Mine	Thigh	,,	,,	3 ×1	29	90
10	HE	,,	Ant.-lat.	,,	6 ×2½	22	90
11	Mortar	,,	Lateral	,,	2½×1	22	70
12	,,	,,	,,	,,	3 ×½	22	Below 70
13	,,	,,	Post.-med.	,,	3 ×½	22	100
14	,,	,,	Post.-lat.	,,	3 ×½	22	100
15	HE	,,	Anterior	,,	3 ×1	39	100
16	,,	Buttock	Central	Oblique	3 ×1	47	100
17	GSW (M-G)	Thigh	Medial	,,	2½×½	85	100
18	HE	,,	,,	Transv.	2½×½	49	100
19	Mortar	,,	,,	Oblique	1•×½	49	100
20	,,	,,	,,	Transv.	4 ×½	94	100
21	,,	,,	,,	,,	4 ×½	94	100
22	,,	Leg	Lateral	Oblique	1½×½	88	100
23	HE	,,	,,	Longtdl.	1½×½	16	100
24	,,	Shoulder	Anterior	,,	2 ×½	62	100
25	Mortar	Thigh	Lateral	Transv.	4 ×½	15	100
26	,,	,,	,,	Circular	1 ×1	15	70
27	,,	,,	,,	Longtdl.	3 ×½	13	80
28	,,	,,	Ant.-med.	,,	½ ×½	13	90

mixture was considered to be too strong, and the series was discontinued after 10 cases.

Series 2.—This consisted of 28 cases. Sulphathiazole was substituted for sulphanilamide and the strength of the mixture decreased to 1 in 20. The wounds were somewhat smaller than in the first group and the time-interval was, if anything, some days shorter, except in a few cases in which the delay before operating was due to a heavily infected wound. (See Table II.) There was an improvement in the results over those of the first group, some 25 cases out of 28 (practically 90%) being completely healed in 3 weeks, although 7 of these were "second-class" results. It is interesting to note that 5 transverse wounds, 4 of them in the thigh, were healed completely on the 10th day.

Series 3.—This consisted of 18 cases. Penicillin was discarded and sulphanilamide used alone. The wounds in this group were smaller, the time-interval shorter, and the bacteriostatic agent weaker than in any of the other groups. (See Table III.) The results were generally somewhat inferior, only

TABLE III.—*Series 3. Sulphanilamide Alone*

No.	Type of Missile	Details of Wound				Interval between Wounding and Suture (days)	Result %
		Location	Situation	Direction	Size (in.)		
1	Mortar	Thigh	Posterior	Transv.	3 × ½	12	80
2	HE	Forearm	Ant.-med.	,,	2 × ½	13	80
3	Grenade	Chest	Posterior	Oblique	2 × ½	17	100
4	Rifle	,,	Anterior	Transv	2 × ½	17	100
5	Grenade	Hip	Lateral	Longtdl.	1 × ½	18	100
6	Mortar	Buttock	Superior	Transv.	3 × ½	18	80
7	,,	Thigh	Lateral	Circular	1 × 1	19	70
8	HE	Arm	Posterior	Transv.	1½ × ½	22	100
9	,,	Thigh	Ant.-lat.	Longtdl.	2 × 1	22	90
10	,,	,,	Ant.-med.	,,	2 × ½	23	90
11	Mortar	Knee	Lateral	Circular	½ × ½	23	70
12	,,	,,	Post.-lat.	Oblique	1 × ½	23	70
13	,,	Thigh	Posterior	Longtdl.	2 × ½	25	80
14	HE	Chest	,,	Oblique	2½ × ½	24	80
15	Mortar	Thigh	Anterior	Longtdl.	1½ × ½	28	Below 70
16	HE	,,	,,	,,	1 × ½	109	,, 70
17	GSW (M-G)	Chest	Posterior	Oblique	2 × 1	34	,, 90
18	Mortar	Thigh	Lateral	,,	2 × ½	42	100

14 wounds out of 18 (roughly 77%) being healed within 3 weeks, 9 of these being "second-class" results. (See also Table IV.)

TABLE IV.—*General Review of Results*

	Percentage Results					Total
	100	90	80	70	Below 70	
Series 1 ..	5	1	2	1	1	10
,, 2 ..	18	4	3	2	1	28
,, 3 ..	5	4	5	2	2	18
Total ..	28	9	10	5	4	56

General Review of Results

The main result of the investigation is that 47 wounds out of 56 (84%) were healed completely within 3 weeks of suturing and that 28 of these 47 wounds (nearly 60%) were healed by first intention on the 10th day. The object of changing a granulating wound into a healed wound in a short time has thus been attained. Further, in the failures no wound was rendered worse by the operation, and even the "poor" results improved on the original condition of the wound.

The combination of a strong bacteriostatic powder and a longer time-interval before suture in Series 1 and 2 has produced better results than the weaker powder and shorter time-interval of Series 3, where, however, there have been more "second-class" results. This would suggest, in this type of wound, that there may be some definite advantage in delaying operation for some time, apart altogether from the degree of infection which may be present, although the poorer results may be due entirely to the weaker bacteriostatic powder employed. These powders can be used in many varieties of strength and mixtures and in conjunction with variations in the time-interval factor.

The wounds themselves provided many interesting features during the post-operative supervision. Those which healed by first intention produced scars just as sound as any resulting from incisional operation; the growth and strength of the epithelium did not appear to be affected in any visible way by the use of bacteriostatics. Occasionally one found on the 10th day that a wound would be a little red and "grumbly" at the stitch-holes but with a firm suture line; this very mild degree of infection never proved to be of any significance, and at the subsequent dressing on the 16th day the wound was usually found to be dry and healed. If on the 10th day the wound showed a more definite reaction, with beads of frank pus at the stitch-holes, the routine dressing was carried out, but any subsequent dressing was done when indicated. The pus was always superficial and never very copious, and did not seem to be of any great virulence—points which have been noted repeatedly when bacteriostatics were used.

Second-class results (90% and 80%—see Table IV) were considered to be those which, not healed on the 10th day, recovered from some local infection to be dry and healed on either the 16th or the 22nd day.

When portions of the wound broke down or the stitch-holes gaped, the open portions cleaned up fairly well and quickly, leaving active healthy-looking granulation tissue; sometimes the intervening epithelial bridge appeared to be rather delicate, but the underlying framework always seemed strong enough to bind the wound.

Conclusions

The causative missile has been mainly high-explosive shell or mortar shell; the nature of the missile causing the wound has had no obvious effect on healing (see Table V), nor has

TABLE V.—*Results in Accordance with Causative Missile*

	Total	Percentage Results				
		100	90	80	70	Below 70
Mortar ..	25	11	2	6	4	2
HE	21	10	5	4	—	2
GSW	5	3	1	—	1	—
Mine	2	1	1	—	—	—
Bomb ..	1	1	—	—	—	—
Grenade ..	2	2	—	—	—	—
Total ..	56	28	9	10	5	4

the healing process been obviously affected by the location, situation, or direction of the wound.

The direction of the new wound should be longitudinal. Longitudinal wounds are more easily repaired, and should do better mechanically than those which are transverse both to the axis of the limb and to the line of muscular contraction. Wounds are mostly opened up in a longitudinal direction at the time of the original operation, so that the direction of the new wound in most cases is predetermined.

The surface area of the granulating wound to be excised is of no consequence provided the skin edges after excision can be approximated for suturing without tension. The depth of the granulating wound has some bearing on ultimate healing, as this may harbour a potential source of infection.

The healing of 47 wounds out of 56 subjected to the treatment is a definite indication that the method of "excision and suture" can be applied to these infected granulating wounds with the expectation of obtaining a cure. Having shown the effectiveness of the actual operative technique, I believe that still better results can be obtained by the carefully planned administration of pre-operative penicillin. The sulphonamides, in the presence of infection, are not strong enough to be used alone.

The advantages gained by the technique have been: (1) a considerable saving in healing time, which can be estimated in days as against weeks of a granulation fill-up; (2) a clean first-intention wound; (3) a soft, painless, non-adherent scar; (4) a more rapid and more complete functional recovery.

Summary

A technique to cure infected granulating wounds by "excision and suture" is described. Three groups of wounds have been subjected to treatment, and 47 wounds out of 56 have completely healed in 3 weeks. The detailed results of the treatment are given and certain conclusions presented.

THE ORIGIN OF BRONCHOGENIC TUBERCULOSIS IN THE ADULT

PATHOLOGICAL ASPECTS OF "EXOGENOUS AND ENDOGENOUS REINFECTION"

BY

WALTER PAGEL, M.D.

(Department of Pathology, Central Middlesex County Hospital)

I still think that work on tuberculosis should be based on morbid-anatomical findings. At any rate, these should be taken into consideration and not simply ignored.

Significance of the Primary Complex

Morbid anatomists agree that a primary complex is found in almost every case, regardless of natural resistance or any other condition except that primary infection has taken place. This applies particularly to recent infection in young adults. In these the actual primary foci are often very small—pin-point or pin-head size. It may take the anatomist a long time to find them, but he will do so if he persists. Such foci obviously do not show up in skiagrams. Wallgren (1938) has shown that the primary focus cannot be seen in the radiograph unless calcified or forming an infiltration. *Nevertheless the primary complex is there,* and it is there regardless of age, race, or constitutional type, provided that the person was primarily infected.

Late Primary Infection and Bronchogenic Tuberculosis

Late primary infection is prone, after a short time, to cause an Assmann focus.* This has been shown by the investigations of Malmros and Hedvall (1938), A. S. Hall (personal communication), Kayne (1942), Simmonds (1942), C. B. Thompson (personal communication), and others. While it is theoretically possible that these Assmann foci are due to a new "exogenous reinfection," their quick succession upon primary infection and the interposition of small disseminated, notably apical nodules (so-called Simon foci), as shown by Malmros and Hedvall, suggest that all these are manifestations of the same infection. The findings of Malmros and Hedvall are in remarkable conformity with the morbid-anatomical observations. The latter (see Pagel, 1942) have shown that a primary complex—old or fresh—precedes bronchogenic tuberculosis in *all* cases, adults as well as children.

The Evidence for "Endogenous Reinfection"

In support of this theory we used to adduce two facts: (1) The pictures of recrudescence of old especially calcified foci. I agree that about 70% of primary foci sterilize themselves after some years. Yet the occurrence of more than one primary complex in one person remains the exception (see figures: Terplan, 1940). Sterilization is less effective, and takes a longer time in calcifying *post*-primary foci—and it is these which are outstandingly incriminated in bronchogenic tuberculosis due to recrudescence. (2) The common occurrence of solitary Assmann foci in cases of disseminated tuberculosis in which all manifestations are blood-borne.

But what about the cases without recrudescence? We now know that many cases are actually *late primary* infections with bronchogenic tuberculosis ensuing within a short period (see above). The quick succession of primary infection and early bronchogenic tuberculosis with interposition of the typically haematogenous Simon foci is no proof, but strong circumstantial evidence in favour, of the three focal changes (primary, apical, and infraclavicular) being manifestations of the same process; in other words, the post-primary changes are affiliated to the primary focus—they are due to haematogenous dissemination from it.

Endogenous reinfection by recrudescence of calcified foci is therefore of less importance than it used to be at a time when the majority of primary infections were acquired in childhood. Endogenous reinfection nowadays does occur from comparatively fresh primary foci.

Some recent investigations (see review of literature, Daniels, 1944) are based on clinical data and the rabbit experiments of Lurie (1941). Their finding is that in adults no primary infection is visible in the skiagram, and the process apparently begins at once as bronchogenic tuberculosis. The absence of a primary complex and disseminated tuberculosis is interpreted as a sign of natural resistance, as observed in certain inbred rabbits and in white patients in contrast to negroes.†

It is not unlikely that, among negroes, primary infection is more conspicuous in the skiagrams, and disseminated tuberculosis more common, than in white patients, and that this is due to lack of natural resistance on the part of the former.† But this proves no more than it does in babies, which show severer infection and more fatal dissemination than older children and adults. Any tuberculous infection runs a severer course in the less resistant.

It does not prove, however, that the type of tuberculosis developing (primary, post-primary, disseminated, and bronchogenic) depends upon natural resistance. Experimental, clinical, and morbid-anatomical evidence goes far to show that almost every primary infection is liable to cause dissemination. This is usually mild, and does not lead to appreciable changes. Disseminated tuberculosis, even if fully developed, shows good healing in many cases. On the other hand, bronchogenic tuberculosis is so often fatal. The number and viability of bacilli causing primary infection, the environment, the nature of the infecting source, acquired resistance (allergy, economic conditions, repeated superinfection), etc., will decide the form of post-primary tuberculosis, if any such manifestation develops. Of course, natural resistance has a word to say therein, in that it will modify the influence of the economic make-up, superinfection, and allergic response.

Restriction of the tuberculous process to the lung may be interpreted as an indication of acquired resistance, since it can be reproduced in the experimental animal by vaccination with heat-killed tubercle bacilli or live organisms of attenuated virulence prior to virulent intravenous infection (Pagel, 1936). The fate of the tuberculous person is decided by his inborn resistance.

Conclusion

Contact (exogenous infection) can play an important part in the genesis of bronchogenic tuberculosis. This may be due to its causing late primary infection, soon followed by tuberculosis, developing from within.

Inborn resistance decides the severity of the infection in the individual. It does not decide the type in which tuberculosis manifests itself (primary, post-primary, disseminated, bronchogenic).

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* I.e., a post-primary caseous change, preferably in the infraclavicular area of the upper lobe, which by its tendency to cavitation and spread via the bronchial system causes the common bronchogenic tuberculosis of the adult. This is restricted to the lungs and, in contrast to primary infection, is not followed by caseous changes in the regional lymph glands. In the rare cases in which bronchogenic spread is caused by a cavitating primary focus ("primary cavity") this is recognizable as such by the presence of caseous changes in the corresponding lymph glands.

† It should be borne in mind, however, that the size of the primary changes bears no relation to the severity of ensuing dissemination. A pin-head primary complex in the lung may be rapidly followed by meningitis or miliary tuberculosis.

The Dublin Rheumatism Clinic Association has issued its first annual report, covering the year 1943. The clinic is situated at 34, Upper Mount Street, under the direction of Dr. T. J. O'Reilly. The association was set up by the Minister for Local Government and Public Health and incorporated in 1942, and its immediate work falls into three stages: (1) the establishment in Dublin of a clinic for the treatment of rheumatic diseases; (2) study of the rheumatism problem based on the experience afforded at this clinic; (3) the planning and provision for the country of facilities for such treatment as are available to Dublin. The first stage of the work has been accomplished, and the report records progress made in that respect as well as indicating some progress in the second stage.

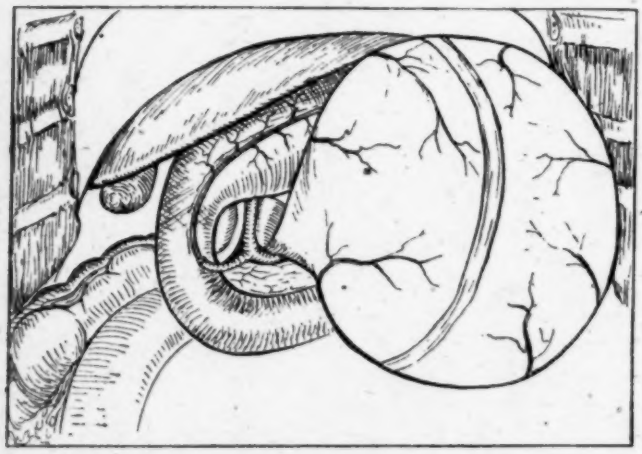
Medical Memoranda

Hernia of Caecum into Lesser Sac of Peritoneum Complicated by Volvulus

CASE REPORT

The patient, an obese female, arrived at hospital with a history of abdominal pain and vomiting of four days' duration. There were no previous attacks, but she had a strangulated umbilical hernia several years ago, at which time she had similar symptoms. Her present pain, however, starting as a colic, had become continuous. Examination revealed a dyspnoeic and severely shocked patient, with a rapid pulse of poor volume, a cold and clammy skin, and cyanosis of the extremities. The abdomen was greatly distended, and diffusely tender and rigid. No external hernia was present. A diagnosis of strangulated intestinal obstruction with peritonitis was made. The administration of plasma intravenously, oxygen by a B.L.B. mask, and evacuation of the stomach failed to improve her general condition, and she died in a few hours.

Post-mortem examination revealed a large swelling in the lesser sac of peritoneum, which displaced the stomach and liver upwards and towards the right side. The liver was compressed under the right cupola of the diaphragm, which was itself displaced upwards to a marked degree. No tapering left lobe was present on the liver. On removal of the gastro-colic omentum the swelling was found to be an intestinal sac measuring 20×15×12 cm. and filling the whole of the lesser sac of peritoneum. Further investigation showed that the condition was a hernia, through the foramen of Winslow, of the caecum and terminal ileum, and that the hernia had undergone volvulus through 180°, which caused complete obstruction. The



walls of the distended caecum were very thin and congested, but not gangrenous or perforated. The small intestine was greatly distended and diffuse peritonitis was present. The foramen of Winslow was considerably larger than normal, and the hernia was ultimately reduced without puncturing the intestine. The ascending colon had a long mesentery continuous with that of the ileum.

COMMENT

Since the first case, recorded by Blandin in 1834, about 50 cases of intestinal herniation through the opening into the lesser sac of peritoneum have been described. It is possibly the rarest type of internal hernia (Silverstone, 1939). Excellent reviews of previous cases have been given by Ullman (1924), Dewis and Miller (1927), Silverstone (1939), and Edwards and Stewart (1943). It appears that in only 10 cases was the caecum present in the lesser sac. In no case was a volvulus reported present, so the case described here is apparently unique in this respect.

The distortion of the liver and the large size of the foramen of Winslow suggest that the hernia had been present for a considerable time without giving rise to symptoms until the volvulus was superimposed. Dewis and Miller (1927) stressed the fact that this form of hernia can be present without giving rise to obstruction, and can apparently reduce itself. The only congenital abnormality was the long mesentery of the ascending colon, without which, of course, the herniation would have been impossible.

H. A. HAXTON, CH.M., F.R.C.S.

Department of Surgery, Radcliffe Infirmary, Oxford.

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Reviews

REACTION TO INJURY

Reaction to Injury. Pathology for Students of Disease. Based on the Functional and Morphological Responses of Tissues to Injurious Agents. By Wiley D. Forbus, M.D., Professor of Pathology, Duke University. (Pp. 797; illustrated. 50s.) London: Baillière, Tindall and Cox.

This volume contains the first two sections of a treatise on pathology which will be complete with the publication of the third and fourth parts, now in course of preparation. It is an ambitious piece of work; its central plan is based on the belief that the essential element in disease is the reaction of the whole individual to the agents and influences comprising his environment. Pathogenesis supersedes specific aetiology, and the old conventional division of pathology into "general" and "special" sections goes by the board. The reader's attention is centred from the start upon "broad relationships and general principles rather than upon isolated, factual, and often deceivingly dramatic details." The author's outlook has been quite obviously deeply influenced by W. G. MacCallum, to whom he owes "so much that it all must remain unsaid." Even a short examination of the text quickly recalls MacCallum's great classic.

The author's attitude to his public—the student—is refreshing and stimulating. He regards the student of disease, for whose guidance the book was written, as being "quite as intelligent as his instructors" and entitled to be dealt with as a responsible junior colleague. For these reasons basic principles are treated fully and accurately, controversial subjects are closely and clearly argued, and recent research work is fully described. This is therefore no book for the student who wishes to assimilate temporarily just enough pathology to pass his final examination. Even the illustrations, which as the author states are not chosen for decorative purposes, need attentive study. They are excellent, and are closely correlated with the text and accompanied by full descriptive legends. Each chapter ends with a carefully compiled bibliography.

The next edition of this book will be awaited with interest, and it is safe to predict that the completed treatise will occupy an important place in pathological literature.

PSYCHIATRY

A Textbook of Psychiatry for Students and Practitioners. By D. K. Henderson, M.D., F.R.F.P.S., F.R.C.P.Ed., and R. D. Gillespie, M.D., F.R.C.P., D.P.M. Sixth edition. Oxford Medical Publications. (Pp. 719. 25s.) London: Oxford University Press. 1944.

Henderson and Gillespie has deservedly established its place as the standard textbook of psychiatry in this country. The appearance of a sixth edition in this era of paper shortage is evidence enough of its importance and popularity. As the authors point out, psychiatry is extending its borders so rapidly that the young psychiatrist is faced with an alarming list of sciences, from statistics to physics, with which he may be expected to be familiar. Still his subject is growing in value and is of supreme interest. Perhaps the most important change in this edition is the greater importance accorded to the psychoneurotic reaction types in view of their frequent occurrence in the practices both of the specialist outside the mental hospital and of the family doctor. This group is held to be the result of unconscious mental conflicts in contrast to the constitutionally determined mental illnesses such as depression, paranoid reactions, and the rest.

A new chapter is devoted to special methods of physical treatment, consisting of insulin therapy, cardiazol therapy, electric-convulsion therapy, leucotomy, continuous narcosis, and narco-analysis. As the authors say, the continued success of these methods, in spite of the absence of logical reason for their success, may result in new light appearing on psychophysical mechanisms. The authors agree that electrotherapy is the best form of shock treatment, and that the most favourable results are obtained in depressives, including involutional cases. Leucotomy they say should be reserved for patients in whom all other suitable methods of treatment have been tried and failed; where the illness offers no reasonable hope of spontaneous recovery; and where the patient is disabled more or less completely from useful occupation or from social enjoyment of his life.

The paranoid "schizophrenic" type has been removed from the schizophrenic group and is discussed in relation to paranoia, with which it has more affinities. The chapters on epilepsy and war psychiatry have been enlarged and strengthened, and the other sections of the book have been revised and brought up to date. Old readers will welcome an old friend still youthful and vigorous but more mature, and new readers must have this textbook on their shelves.

GUIDE TO PHARMACOLOGY

Pharmacology. By J. H. Gaddum. Second edition. (Pp. 460; illustrated. 21s.) London: Oxford University Press. 1944.

When this useful textbook was first published in 1940 the author observed in his preface that it was intended for medical students "at a stage in their education before general principles become obscured by a mass of practical details." He then went on to suggest that it might also be of use to medical men, because it tried to give them some knowledge of the kind of evidence that justifies the trial of new drugs. Certainly to-day medical men need this information more than ever, for the introduction of new and potent remedies into clinical practice proceeds at almost a breathless pace. Prof. Gaddum begins with a chapter on diet, and proceeds with chapters on vitamins, hormones, stimulants to the central nervous system, and narcotics, ending with chapters on chemotherapy and general pharmacology. At the beginning of the book he gives metric equivalents for apothecaries' and avoirdupois weights and for imperial measures. Another pleasant foretaste to the book proper is a three-page summary of pharmacological literature for those who wish to explore further.

Prof. Gaddum is a sure and delightful guide, and writes a simple straightforward English free from ambiguity. He has a happy knack of fixing a fact in the mind by the judicious use of a sly humour, as when he refers to the annoyance felt by miners when they found that the remedy for "stokers' cramp" was only salt and water. The discovery that a certain amount of calcium was needed to maintain activity of isolated tissues hung upon the fact that Dr. Sidney Ringer, when his assistant took a holiday, used distilled water in making up isotonic solutions for the study of isolated hearts. The hearts did not beat. When Ringer's laboratory assistant made up the solutions he used tap water to save himself trouble.

In a short note on manganese the author observes that exposure to clouds of manganese dust causes atrophic changes in the basal ganglia of the brain, and that oral administration may cause cirrhosis of the liver. Reference might perhaps have been made here to another condition in which there is an association between cirrhosis of the liver and lesions in the basal ganglia—namely, in the rare clinical condition known as hepato-lenticular degeneration, or Wilson's disease. The two chapters on hormones include a few illustrations which tell a lot in a short space; particularly effective is the photograph of two frogs in a dish, one of which had been injected by an extract of the pars intermedia of the pituitary: this frog is completely black from the expansion of its melanophores, while its untreated control is normally speckled.

Some of Prof. Gaddum's notes on the therapeutic uses of the substances he discusses are tantalizing because he whets the appetite without always satisfying it. Primarily, of course, his book is not a book on therapeutics, but if he discusses the clinical use of androgens in old age and eunuchoidism one would like to see a brief summing up of the question of the hormone treatment of enlarged prostate. There are one or two small points of criticism: for example, should not aneurin be spelt thus—i.e., without a terminal "e"? And is it really correct to say that progestin is "Greek for pregnancy hormone"?

Notes on Books

The report presented by the Director-General to the second session of the Council of the United Nations Relief and Rehabilitation Administration, held in Montreal last September, has been published on behalf of the European Regional Office of U.N.R.R.A. (11, Portland Place, London, W.1) by H.M. Stationery Office at 2s. 6d. This report covers the progress of the administration's past activities and its proposed activities during the immediately foreseeable future, as well as the work of the Central Council since its first session. A further publication will follow containing statements made by representatives of the combined chiefs of staff, the reports of the intergovernmental allocating agencies, and the text of the council's resolutions.

On Aug. 30, 1944, Dr. The Svedberg, professor of physical chemistry in the University of Uppsala, reached the age of 60. His colleagues, pupils, and other friends in scientific and industrial research decided to commemorate the occasion by a book dedicated to him and bearing his name on the cover. For reasons explained in the preface the contributions have been limited to the field of chemistry in its widest sense, including work in the borderland of other sciences, and technology in particular, to which Prof. Svedberg during recent years has devoted so much of his time and energy. The editorial committee hopes that this volume will give something in the nature of a cross-section of Swedish activities in chemical research during difficult years.

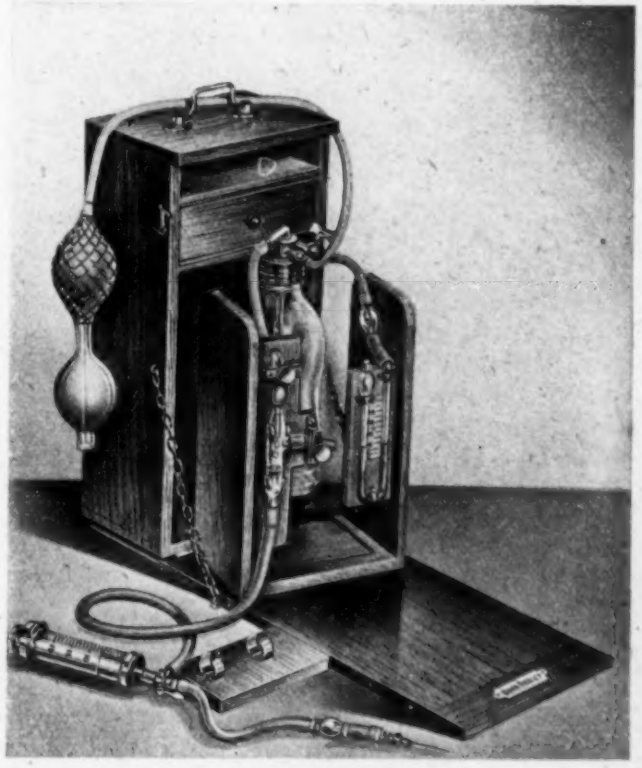
Preparations and Appliances

APPARATUS FOR CONTINUOUS PENTOTHAL

Major D. E. DUNNILL, R.A.M.C., writes:

The preparation of a simple portable and completely self-contained apparatus for the giving of continuous pentothal anaesthesia seems to fill a gap in the anaesthetist's armamentarium, and the following notes and illustration describe one which has been evolved in the light of experience gained during three years of use.

It consists of a case, size $15 \times 6\frac{1}{2} \times 6$ in., which contains a standard Army transfusion bottle for giving intravenous saline; positive pressure is applied with a bellows and measured on a mercury manometer, and the rate of flow through the drip feed is regulated by a screw clamp. The rubber tubing from the drip feed to the intravenous needle has interposed a two-way tap, the second arm of which takes a standard Record syringe, so that at any time the saline can be cut off and pentothal injected. All that is necessary to maintain a steady flow of saline into the vein is an occasional glance at the manometer and drip feed, and a squeeze on the bellows when the pressure falls. Pentothal is injected as often as desired from the syringe, which contains the usual 5% solution.



The case is designed to fit the arm of an operating-table, but can be used anywhere else, such as on a bedside table, and the whole apparatus is easily removed for sterilization. Since, however, the tubing from the two-way tap to the needle is detachable for boiling after each case, the rest of the apparatus remains sterile and can be used repeatedly.

The apparatus is manufactured by Messrs. Down Bros., Ltd., 22A, Cavendish Square, London, W.1.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY DECEMBER 16 1944

A.R.M. ON WHITE PAPER

The Annual Representative Meeting held last week was one of the most momentous in the history of the B.M.A. Nearly 270 Representatives from all parts of the British Isles left their practices for the greater part of a week at a time of the year and a time of the war when work is as hard as it can be. By attending in what must be a record number they thus showed how fully they felt their responsibility to the future of the profession they represent. Any chairman of such a meeting may well have felt dismayed when confronted with more than 370 motions on the White Paper. To add to his apprehensions was the news of the formation of a "ginger group" of the deepest blue, some 80 strong, who, with the intention of forming a solid voting block in the A.R.M., were formulating their policy at private meetings. But the solid good sense of the meeting and the suave tact of the Chairman of the R.B. turned to good use the combustible material that was there, and the representative machine proceeded, somewhat unevenly at times, to a stage from which the Negotiating Body can safely continue the next part of the journey. Throughout the whole four days the skilful guiding hand of the Chairman of Council took the meeting out of the mazes into which it occasionally wandered. The A.R.M., indeed, owed much to his remarkable grasp of the present medico-political situation, and to the sheer practical common sense with which he cleared away the fogs of confused thought.

The net result of the four days' discussion was a decision to negotiate with the Government on the basis of the White Paper only if it were altered in essentials. The starting-point for negotiations is summed up in this motion, put by the Chairman of Council and carried unanimously:

> "That it be an instruction to the Association's representatives on the Negotiating Committee that, without prejudice to other issues, including the 100% question, remuneration and compensation, consideration of administrative structure, central and local, should precede consideration of all other questions, and that agreement on this subject is an essential prerequisite to discussion of other subjects."

This gathers up the trends of the many discussions and deliberations that have taken place since the White Paper was published. The medical profession will refuse to work any scheme for a comprehensive National Health Service unless it is fully satisfied that the administrative structure, central and local, is properly framed to receive such a scheme. While at times several speakers found it hard to distinguish between administration and control, and so urged the doubtful thesis, "No control, therefore no administration," the two concepts were finally disentangled. Sound administration is essential, but the profession will resist any administrative proposals which, in the words of one motion, would tend "in any respect to limit the freedom of judgment and of action of the practitioner, or to weaken his full responsibility for the patient." This was part of a motion moved on the first day by Glasgow under the agenda heading of "General Attitude." It stated, in addition, opposition to a State-salaried service, to civil direction of practitioners, to government of the profession by local health authorities, and, in short, "to most of the machinery of the White Paper." This general attitude was reinforced by another motion which declared the administrative proposals and form of control envisaged by the White Paper to be "inimical to efficiency and progress"; and the fear of Government interference with the doctor-patient relationship found expression in another motion that was passed. In fact, the general trend of the debate showed that current disapproval of the White Paper as a whole is shared by a much bigger proportion than the 53% of the Questionary. Further reflection and deliberation on the Government's proposals have clearly expanded the volume of discontent with it. This discontent finds its most concrete expression on what is known as the 100% issue. The alternating waves of assent and dissent on this question should make quite plain to the general public that the medical profession is not interpreting this matter in terms of finance. Effective ridicule was directed by one speaker against those who screeched out the old parrot-cry, "Vested interest!" against anyone who thought it unnecessary to make public provision for medical advice and treatment for those well able to secure these things for themselves. The medical profession has one "vested interest" which it is its first duty to defend, and that is the sane and unbroken tradition of professional beliefs and institutions that have evolved along with society over hundreds of years. It is this tradition and these institutions which have made possible the emerging of medicine out of magic into medical science. It is therefore the first duty of the profession to preserve what is good in this tradition so that it can continue to evolve in ways that have been well tested by generation after generation of medical men and women. The public will never get a good medical service except from men who are rightly proud of their profession and satisfied with the scope for service offered by it.

The Representative Meeting passed as a substantive motion the Isle of Wight amendment that "pending further information on . . . the machinery whereby private practice is to be continued . . . there be confirmed the view of the A.R.M., 1943, 'that a comprehensive medical service should be available to all who need it, but it is unnecessary for the State to provide it for those who are willing and able to provide it for themselves.'" This vote was against that unification of services under central control which is characteristic of totalitarian regimes. In its opposition the meeting showed a characteristic British distrust of the simplified logic of the doctrinaire. It preferred, in the opening words of a motion by Bournemouth, "that health legislation should proceed by evolution," and went on to pass a motion which urged as the first objective the completion of the National Health Insurance scheme for those at present insured under it by making available to them "institutional, specialist, and all auxiliary services." When this has been done, then the completed service should be

extended to dependants of the insured and to others of like economic status. The approach is at least realistic, and takes into account the fact that medical men have come to live on more or less easy terms with the N.H.I. scheme; this being so, it would seem logical to complete it, to extend it, and to make it more acceptable to the profession by making the capitation fee an adequate reward for work done. We may relate this to an important motion passed with a unanimous vote later in the meeting—namely, that new legislation on health service proposals should be presented in a separate Bill, and should not be incorporated in or be dependent on the financial provisions of the social insurance measure. It would certainly be unfortunate if the Government were to legislate for a new health service in the present session as a way of giving the public an apparent morsel of the new social security measure, legislation on which will not be introduced until a new Parliament has been elected.

As to the administrative machine to be devised, the meeting dropped the idea of putting central administration in the hands of a corporate body, and supported with a large majority the Council's proposals set out in paragraph 40 under the heading of "The Central Body" in the Council's Report on the National Health Service published in the *Journal* of May 13 (p. 646). From the point of view of the profession, the essence of administration is that doctors should have an effective voice at all levels of organization, and that this effective voice should be secured by electing medical men on to the various responsible bodies. For fear lest politics should muzzle medicine, the meeting insisted upon the safeguard that the statutory body corresponding to the Central Medical Advisory Committee should have the right of publication of its recommendations, whether they are agreed to or not by the Minister. As to local administration, the meeting agreed with the Council's recommendation that regional councils should be set up, these to be "representative of local authorities, the medical profession, including general practitioners and the medical staffs of voluntary and municipal hospitals, the representatives to be appointed by the groups or bodies concerned."

At the end of the meeting the Chairman of Council summed up the four days' deliberations (reported in this week's *Supplement*) in the fewest possible words, which we reproduce here, as they give pith to the matter:

"We have expressed ourselves in favour of development of the service.

"We have disapproved of the White Paper as it stands.

"We have decided to negotiate.

"We have appointed our share of the Negotiating Body.

"We prefer the service to proceed by evolution from N.H.I. by first the development of the hospital system and then the extension of the general practitioner services.

"We have stated emphatically that we do not wish to be employed by local authorities, that there should be no civil direction, that there shall be no whole-time salaried service for general practice, and that we shall have no clinical control.

"We have instructed our negotiators that their first action shall be to try to agree with the Government the form of administrative structure, and that no action shall be taken in the matter of negotiations until the administrative proposals have been agreed."

THE BLACK TWIN OF SILICOSIS

According to Rosen's recent book,[1] medical and public interest in the disease now officially known as the pneumoconiosis of coalworkers (aptly termed by a working miner "the black twin of silicosis") has fluctuated during the past few centuries. Certainly the evidence points to a considerable incidence in the English and Scottish bituminous coalfields after the industrial revolution, but this seems to have declined by the 1880's—probably due to improved ventilation and working conditions—only to be succeeded by a wave in the Welsh coalfields, where anthracite seams were being developed rapidly at the close of the century. The present-day particular association of pulmonary diseases due to dust with anthracite mining was demonstrated by independent surveys carried out about the same time in the U.S.A.,[2] the U.S.S.R.,[3] and in this country.[4] Not that the association is exclusive, for in the Welsh steam-coal mines the incidence is by no means negligible; indeed, a remarkable correlation between "rank" of coal and incidence of pneumoconiosis, from highest in anthracite to lowest in bituminous, is evident when *x*-ray criteria are used.[4] The coal-mining industry dominates all others as a source of pulmonary disease. The seriousness of the problem in the Welsh coalfield is shown by an incidence rate over fifty times that of the rest of Britain, while disablement certificates in Wales have increased from 387 in 1939 to 985 in 1943 (a new compensation scheme operated from July, 1943) in a population that had declined from 130,000 to 113,000 in the same period.[5] Cases are becoming so common that the Silicosis Medical Board has a waiting list of six months, even with preliminary filtration by general practitioners and the Welsh National Memorial Association. There is no doubt that the major cause of this recent rapid increase is the detection of hitherto unrecognized cases, and this process is not likely to slacken until the recommended[5] periodic examinations become part of the health control of miners, and until men who are underground though partly disabled are given the opportunity of alternative productive work.

Pneumoconiosis in miners is still a complex and rather baffling disease. Though some American workers believe the relatively small amount of quartz in the dust to be the main cause, it is doubtful if this is the whole story; it may be that other silicates, antidotal substances, and the adjuvant action of the coal itself are important. The progress of the disease is slow and insidious[6]; its predominant symptom is breathlessness on exertion; its main complications are tuberculosis and cardiac failure; its diagnosis in life rests largely on the *x*-ray picture (for an atlas of the chief *x*-ray changes see the first M.R.C. report[4]). There is frequent lack of correspondence between *x*-ray appearance and symptoms in individual cases, but if statistical groups are taken, the more extensive and severe the disease

[1] Rosen, G., *History of Miners' Diseases*, 1943. See *British Medical Journal*, 1944, **2**, 187.

[2] *Publ. Hlth. Bull. Wash.*, No. 221, 1935, and No. 270, 1941, summarized in 4.

[3] Moshkovsky, I. I., *Tuberculosis and Pneumoconiosis among Underground Workers, U.S.S.R.*, 1941. Summarized in *British Medical Journal*, 1942, **1**, 228, and in 4.

[4] M.R.C. Spec. Rep. Ser., No. 243, 1942; No. 244, 1943; No. 250, in the press. London.

[5] Report of Advisory Committee of the Ministry of Fuel and Power on Treatment and Rehabilitation of Coal-miners in the Wales Region suffering from Pneumoconiosis, H.M.S.O., 1944 (reviewed in the *Journal*, 1944, **2**, 347).

[6] Aslett, E. A., Davies, T. W., and Jenkins, T. I., *Brit. J. Radiol.*, 1943, **16**, 308.

on the radiograph the more likely is disability to be present.

What of the future? Treatment of the established condition was symptomatic until powdered aluminium came into use; suggestive results in metalliferous miners suffering from silicosis have been recorded lately,[7] and a carefully controlled trial in coal-miners is indicated. Rehabilitation and resettlement schemes for men partly or even wholly disabled from mining are an urgent and immediate problem; some thousands have gone into war industries of their own accord and have been working happily there, but planned arrangements will be needed for peacetime conditions. For purposes of prevention great hope lies in water infusion of the coal face to allay the dust at its source.[8 9 10] This method, which was first introduced in Britain, certainly reduces the dust; but it will be imperative, by follow-up of selected groups, to be able to say in five to ten years whether the reduction has been adequate to eliminate serious disease. Mechanization, though it tends often to increase dustiness, may, if combined with dust-allaying methods, be ultimately beneficial through reducing the human factor; perhaps we shall even see underground gasification, as in some Russian mines.[11] To carry out and co-ordinate these socio-medical tasks, together with further basic pathological research into causation, a special research centre has been recommended.[5] This may lead to a National Pneumoconiosis Bureau that shall take over the compensation functions of the present Silicosis Board, conduct periodic examinations of all miners, and be concerned, together with the Ministry of Fuel and Power, with preventive methods[5]; the experience of the South African Miners' Phthisis Bureau would justify such a development.

POSTERIOR PITUITARY AND THE UTERUS

It was in 1906 that Dale discovered the stimulating action of an extract of the posterior pituitary gland on the isolated uterus. It was subsequently shown that the posterior pituitary contains two active principles, though neither has yet been isolated in a pure form, and it is still not certain that they have separate existences in the body. The oxytocic principle (pitocin) acts exclusively on the uterine muscle, and the vasopressor principle (pitressin) on the muscle of the arteries and certain smooth muscle of the abdominal viscera. The antidiuretic function of the posterior pituitary is apparently associated with pitressin. The reaction of the isolated uterus to posterior pituitary extract varies from species to species. In certain circumstances pitressin stimulates the human uterus, and pitocin has its greatest effect towards the end of pregnancy and in labour. Chassar Moir[12] has recently studied this problem. The non-pregnant uterus undergoes regular small contractions in the first half of the menstrual cycle. Later these are gradually replaced by larger and more prolonged contractions which merge eventually with the contractions of menstruation. The uterus reacts to undifferentiated posterior pituitary extract at all stages of the cycle, but it was found—rather surprisingly—that the non-pregnant uterus reacts only to pitressin and not at all to pitocin. In early pregnancy the reaction of the undisturbed uterus to pituitary extract is slight, though after evacuation of the uterus the reaction is more pronounced. Both pitocin and pitressin were found to have a motor effect on the aborting uterus, though the response to pitressin is more constant and probably greater. In late pregnancy posterior pituitary fractions have a very variable effect, but, in general, much larger contractions are caused by pitocin than by pitressin, and in labour also. For the first three or four days after parturition pitocin is still more active than pitressin, but towards the end of the first week the oxytocic effect of these two principles is about equal. This extremely important study has certain clinical corollaries. If pituitary extract is used to check haemorrhage in abortion the undifferentiated extract should be used, because pitocin is relatively inactive at this time. But in later pregnancy and in labour pitocin has some advantages; it is relatively free from antidiuretic effect and may therefore be employed for the induction of labour in cases of toxaemia; it is less apt to cause pituitary shock and is therefore to be preferred for the treatment of post-partum haemorrhage; it should be used when intravenous injection is required, but in a dose not exceeding 2 units.

Moir [13] has also reviewed the literature and clinical use of oxytocic drugs generally. Pituitary extract seems to have little advantage over ergometrine in the treatment of post-partum haemorrhage, though he believes that pituitary extract is the more active of the two preparations in the anaesthetized patient. Against this is the danger of pituitary shock—a complication especially likely to occur if the extract is given more than once within a space of half an hour. Pituitary extracts have a relatively transient action on the uterus, which passes off in about half an hour. In a recent letter in these columns[14] Moir points out that advantage may be taken of this fact by injecting pitocin into the fundus of the uterus to aid in the expulsion of the placenta. If expression of the placenta is unsuccessful haemorrhage is checked, and manual removal may be performed half an hour later. While deprecating the routine use of oxytocic drugs before the placenta is delivered, he points out that this manœuvre may, in suitable cases, avoid the necessity for manual removal. It may be added that the evanescence of the effect of posterior pituitary extracts is in itself a danger, and when they are given for post-partum haemorrhage it is well to supplement them with an oxytocic of more prolonged effect, such as ergot praeparata.

THE NUTRITIVE VALUE OF YEAST

Weight for weight yeast is the most nutritious foodstuff known. Perhaps "foodstuff" is not the correct term, as yeast is not taken in any quantity as a food. The small amounts added to bread are negligible from the nutritive point of view—a point of view which is developed in a recent monograph by Somogyi.[15] On a dry-weight basis yeast contains some 50 to 60% of protein—far more than any animal source—and this is stated to be as good biologically as the protein in milk. No animal can rival yeast in the proportion of protein it holds in its tissues. Yeast contains the essential amino acids tryptophane, methionine, valine, leucine, isoleucine, histidine, and lysine. It is an excellent source of the B vitamins, and has nearly 2% of potassium, 5% of phosphorus, and 0.03% of iron, all essential constituents of the diet. Among other important substances in yeast are glutathione and ergosterol (both 0.5 to 0.6%), glycogen (40%), lecithin (2 to 4%), and nucleic acid (26%). If yeast is irradiated the ergosterol

[7] See *British Medical Journal*, 1944, **2**, 601.
[8] Jenkins, P. T., *Proc. S. Wales Inst. Eng.*, 1943, **59**, 306.
[9] Ministry of Fuel, S.R. & O., No. 1696, 1943, H.M.S.O., London.
[10] Ministry of Fuel Safety Pamphlet No. 12, 1944, H.M.S.O., London.
[11] See *Nature*, 1944, **154**, 590.
[12] *J. Obstet. Gynaec. Brit. Emp.*, 1944, **51**, 181.
[13] *J. Obstet. Gynaec. Brit. Emp.*, 1944, **51**, 511.
[14] *British Medical Journal*, Nov. 4, 1944, p. 606.
[15] *Beihft. Z. Vitaminforsch.*, No. 4, 1944, Berne.

is transformed into calciferol equivalent to 3,000 to 4,000 i.u. of vitamin D per gramme of yeast. A fifth of a gramme of irradiated yeast a day would thus suffice for the prophylaxis of rickets in the young infant. If there are no technical difficulties in the way of producing irradiated yeast on a commercial scale rickets could be prevented for a trifling sum.

The vitamin-B content varies in different kinds of yeasts, the best source being brewers' yeast, which may contain up to 25 mg. of vitamin B_1 per 100 grammes; this may be increased to 90 mg. per 100 grammes if the yeast is grown in special media. The "average man," it may be recalled, is thought to require about 2 mg. of vitamin B_1 daily. The riboflavin content of yeast varies from 1.8 mg. to 5 mg. per 100 grammes, and that of nicotinic acid from 10 mg. to 100 mg. Yeast is the richest-known source of vitamin B_6, of pantothenic acid, and of biotin—three other members of the vitamin B complex.

It is possible that yeast may play an important part in human nutrition in the future. It is a source of protein and vitamins (far cheaper than vitamins out of a bottle) and could be used to fortify the refined diets of our modern civilization. Bakers' and brewers' yeast are not altogether suitable for human consumption because they are not tasty enough. As pointed out previously,[16] food yeast, or the dried yeast *Torulopsis utilis*, is more palatable than bakers' and brewers' yeast and can be manufactured more cheaply. If it is made on the scale now contemplated it can be produced for sixpence a pound. Thus for three-halfpence a day it would be possible to obtain 50 grammes of first-class protein and an adequate supply of all the B vitamins necessary for human nutrition: but who would eat it?

CONWAY EVANS PRIZE

The Presidents of the Royal Society and of the Royal College of Physicians have awarded the Conway Evans prize to Sir Thomas Lewis, M.D., F.R.S., F.R.C.P., in recognition of his great contribution to medical knowledge on the normal and abnormal mechanisms of the heart and circulation of the blood. This prize, in accordance with the will of the late Dr. Conway Evans, who was medical officer for the Strand district, is awarded from time to time for scientific work of outstanding distinction. It was first given to Sir Charles Sherrington in 1927, and since then to the late Dr. John S. Haldane in 1933 and to Sir Gowland Hopkins in 1938. It will be seen that so far the prizes have been awarded infrequently with the intention that they should be given only in recognition of outstanding contributions to science, thus fulfilling the intention of the donor. Sir Thomas Lewis has worked essentially in a field which he has called "clinical science," and he has clearly indicated how the modern developments of science in general can be applied to the many problems of medicine at the bedside.

THIRTY YEARS OF DISTRICT NURSING

District nursing—the service if not the name—has been in existence not for thirty but for a hundred years. It may perhaps be dated from the foundation by Elizabeth Fry of the Institute of Nursing Sisters for the poor in their own homes. Queen Victoria's Jubilee Nurses date back for more than half a century. But it was in 1914 that the Central Council for District Nursing in London was established. To commemorate thirty years' history a pamphlet has been published recalling some of the Council's achievements. At the inaugural meeting, held at the offices of the old Local Government Board, Sir William Collins was elected chairman, and he is still chairman to-day, a noteworthy record of public service among many others which Sir William has to his credit. Dr. (now Lord) Addison, first Minister of Health, was the first vice-chairman. The Council, in addition to the general co-ordination of the work of district nurses, has applied itself to many useful activities. An early effort was to produce a directory of 20,000 streets in the County of London, showing the nursing association by which each was served. Arrangements were made for the home nursing of measles, rubella, and whooping-cough, and, at a later date, of scarlet fever. Maternity nursing had special attention. Nursing of public assistance patients was put on a new basis with the abolition of Boards of Guardians and the taking over of public assistance by the L.C.C. in 1929. A system of daily visits to people who could not meet the expense of, or even accommodate, a private nurse, and yet were not eligible for charitable nursing, was inaugurated. The Council has also done much to make uniform and more adequate the salaries paid to district nurses. To-day it can be said that in Greater London, with the exception of some new areas of population in Middlesex, an adequate service of district nursing is functioning and forms an indispensable auxiliary to the work of hospitals and medical practitioners.

[16] *British Medical Journal*, 1944, **2**, 668.

TREATMENT IN PSYCHIATRY

The annual report of the medical director of the Cassel Hospital, Dr. C. H. Rogerson, is concerned largely with a contrast between the older and the newer methods of treatment in psychiatry. The more recent treatments are already well known. After paying a well-deserved tribute to the psychotherapeutic work of the late Dr. T. A. Ross, the first director of the hospital, the report mentions the additional techniques of analysis and elucidation which have been developed in the past few years, and describes especially the method of "narco-analysis." At the Cassel Hospital, instead of receiving an intravenous barbiturate for the purpose, the patient inhales nitrous oxide from a standard apparatus for obstetric anaesthesia. The report considers that it has much value where a deadlock in the process of psychological analysis is reached. Continuous narcosis has been used for the early stages of acute anxiety states and for more chronic cases associated with much agitation or excitement. Modified insulin therapy has been used to hasten the disappearance of basic anxiety symptoms after the psychological treatment has made the root of the neurotic symptoms clear. Electric shock therapy, which is so valuable for endogenous depressions, has not been found of benefit in anxiety neurosis, conversion hysteria, and obsessional neurosis. (Incidentally, the term "affective neurosis" is used instead of anxiety neurosis, and the term "affective psychosis" for mild depression.) A remarkably successful example of prefrontal leucotomy is reported. The new methods obviously open up the field of treatment in a convincing variety of ways, but in the opinion of the director they do not supersede the older methods. The postgraduate training scheme in psychiatric nursing made possible by the bursaries provided by Sir Felix Cassel is described. It represents a comprehensive curriculum which should prove most stimulating to the nurses fortunate enough to obtain this opportunity.

At the recent meeting of the General Medical Council Sir Herbert Lightfoot Eason, C.B., C.M.G., M.S., was elected President for the term ending on Nov. 30, 1947.

Correspondence

R.M.B.F. Christmas Gifts

SIR,—In October and again last week Sir Thomas Barlow, as president of the Royal Medical Benevolent Fund, appealed in your columns for Christmas gifts for beneficiaries of the Fund: aged or infirm medical practitioners, their widows, and their dependants.

Sir Thomas Barlow is the Senior Fellow of the Royal College of Physicians and was its President for five years. This year he has reached his hundredth year, and the College is anxious to mark this very notable occasion. A cheque for one hundred guineas is being sent by the College as a donation to the Fund which Sir Thomas has for many years so faithfully served. I have no doubt that many of your readers will wish to be reminded of this anniversary.—I am, etc.,

MORAN,
President, Royal College of Physicians.

Anaesthesia and Shock

SIR,—One hopes that the conclusions reached in the article on general anaesthesia in shock by Dr. Crooke and his colleagues will not be accepted without reservation by anaesthetists. These conclusions are based on incomplete investigations on only 26 cases.

It is stated that the most important single factor influencing the mortality rate has been the anaesthetic. No real evidence is brought forward to support this. Many of us would suggest that the anaesthetist is more important than the anaesthetic. Pentothal sodium is classed with spinal analgesia as a blood-pressure depressant. It is generally agreed that spinal analgesia is unsuitable for shocked patients, but pentothal sodium has been used with the greatest success in thousands of battle casualties, many of whom are profoundly shocked. It is well known that pentothal sodium produces a moderate fall in blood pressure, but, if given carefully and in small amounts where necessary, the advantages may well outweigh the disadvantages. The authors' conclusions are reached on investigations of 2 cases.

Cyclopropane is suggested as the most suitable anaesthetic for the shocked. Many of us agree that this is true in many cases, but not universally. The blood pressure has been found to rise when using cyclopropane in 7 cases and to fall in 1. This does not altogether agree with Beecher's findings (*Physiology of Anesthesia*, p. 179). He states that "as a rule the blood pressure is little elevated and remains near normal throughout cyclopropane anaesthesia." Waters (*Lancet*, 1936, **2**, 629) believes that if a rise in blood pressure occurs it is due to increased CO_2 concentration. This may or may not be desirable.

The point I wish to make is that the authors are attempting to make the most far-reaching conclusions on data which can only be regarded as very insufficient.—I am, etc.,

D. C. DEVITT,
Hon. Anaesthetist, Mount Vernon Hospital and Radium Institute.

Smoking and Duodenal Ulcer

SIR,—When one considers the widespread practice of tobacco smoking and the almost unlimited material for observation and investigation, it seems rather remarkable that a very definite and dogmatic opinion is not forthcoming in respect to its influence upon physical and mental efficiency; the production of peptic ulcer, arteriosclerosis, or other pathological conditions; and a number of other more or less feasible attributions.

I venture to believe that the majority of us are still actuated by an earnest search after the truth, whether or no we are in a position to be interested in the dividends of the Imperial Tobacco Trust; and although I am prepared on *a priori* grounds to expect some malevolence from the cigarette in regard to duodenal ulceration, I am far from persuaded that a strong case has been made out for its condemnation. In any statistical inquiry upon the incidence of this, as of any common lesion, it is only to be expected that smokers predominate. And if we never encountered an example among non-smokers we could issue our prohibition with fervour and even fury. But we find not a few among the worst sufferers who have completely abandoned the habit, some of whom, in fact, have never smoked in their lives.

During the last 25 years the increase in cigarette smoking among women has been enormous. Sufficient time has by now elapsed for results to have displayed themselves. What evidence have we that there has been a corresponding increase among females in the incidence of peptic ulceration? It requires a very cautious statistician to isolate with confidence one essential factor. Forty years ago a comparison of the athletic capabilities of smokers and non-smokers would have shown an overwhelming superiority of the smokers. In those days the non-smoking young male was a rarity, generally represented by the crank or the aesthete with little athletic capability or ambition. A similar inquiry to-day would probably be slightly in favour of the non-smoker. Yet this is not to indict tobacco. I have noted a steadily growing tendency among young men, by no means cranks or aesthetes, to refrain from tobacco as a reaction—I have been tempted to believe—against the practice now so common in women.—I am, etc.,

London, W.1. ADOLPHE ABRAHAMS.

Beds for Tuberculous Patients

SIR,—Much has been said already about the lamentable shortage of accommodation for Tb patients. The great difficulties of staffing adequately even the available beds, let alone the impossibility of increasing accommodation by allocating more beds for these cases, are well known and need no further discussion. The Ministry of Labour is certainly doing everything possible under wartime conditions to alleviate the situation. But, alas! it remains as grave as ever. The danger of the infection being spread by so many people who cannot find institutional accommodation has become a national problem of first-class importance. No stone should be left unturned in order to find some emergency solution and to diminish the severe danger, already imminent, that tuberculosis is going to get entirely out of control.

On a previous occasion (*Lancet*, 1943, **1**, 817) I suggested a clear-cut definition and classification of cases of pulmonary tuberculosis in order to economize the use of the much too scarce sanatorium beds available. I pointed out that "advanced and chronic cases unlikely to benefit from sanatorium treatment but needing symptomatic treatment and proper nursing, cases which have to be isolated for the protection of their relatives, especially of children, should never occupy sanatorium beds. What they need is hospital accommodation of a simpler kind."

May I now draw your attention to an emergency measure which is working very satisfactorily in the county borough of Doncaster. The Public Assistance institution here, which serves not only the borough but also the rural district and the adjacent West Riding area around and near Doncaster, has set apart two small isolation wards for cases of advanced open tuberculosis which are beyond the stage of sanatorium treatment or thoracic surgery. Thanks to the perfect co-operation of the Doncaster borough health authorities as well as of the Public Assistance Board who are running the institution, I am, as clinical tuberculosis officer, in control of these beds, which are being paid for not by the Public Assistance people but by the Tb authorities. Thanks to this arrangement I have never had to admit hopeless chronic cases to our borough sanatorium, which is strictly reserved for pulmonary cases suitable for treatment. This, by the way, enables me to accommodate always a fair percentage of West Riding cases in addition to our borough cases at our sanatorium, and thereby to alleviate to a certain degree the tense situation in the West Riding.

If different classes of helpless and hopeless patients are in equal need of hospitalization, surely the cases which constitute so severe a public danger, as do those of phthisis, should be given due consideration by the authorities concerned with and responsible for public health and public welfare. Cases of diphtheria or scarlet fever would not be tolerated to infect the members of an overcrowded house without adequate means of isolation. Why, then, is the more serious threat of such a crippling and fatal a disease as tuberculosis, which can only be classified as the most serious and most important "social disease," not being given the attention it deserves in the vital interest of the nation?

Competition between, and overlapping responsibilities of, different departments, so often insurmountable obstacles in tackling this major problem of public health, can, as the Doncaster case proves, be overcome with some good will and understanding among the parties concerned.—I am, etc.,

Doncaster. E. G. W. HOFFSTAEDT.

"Unusual" Case of Tuberculosis

SIR,—The case of generalized tuberculosis reported by Major Mylechreest and Capt. Scott (Nov. 25, p. 693) is hardly to be considered "unusual" if we take a wide view of tuberculosis. It is certainly unusual in these islands and among the white inhabitants of America, though it is not unknown. The authors do not say whether their patient was a white or a black American, but I assume he was white. The case is very much in line with the common tuberculosis of the African, and the authors will find the contrast between Africa and European tuberculosis well set forth in the report of the South African Tuberculosis Committee (1932), "Tuberculosis in South African Natives with Special Reference to the Mine Labourers on the Witwatersrand," on page 156. I think that most workers would differ from the authors in the conclusion that "the absence of macroscopic caseation in the various affected organs argues a comparatively high resistance on the part of the patient." The persistent pyrexia and erythema nodosum are common in the early undeclared cases of tuberculosis without much or any resistance to the germ. It is, perhaps, a natural error for medical men brought up in the midst of the very "resistant" types of tuberculosis common in this country to regard as unusual any variation from the normal and chronic type seen here, but I feel that the case quoted is not unusual if we take into account the whole of tuberculosis from a wider point of view.—I am, etc.,

S. LYLE CUMMINS.

Injuries from Flying Glass

SIR,—In his interesting article on flying-bomb casualties Dr. R. C. Bell (Nov. 25, p. 689) states: "The penetrating power of flying glass is, in the main, low. It is unusual for it to pierce the deep fascia; usually it lies just under the skin in the fat." This has not been my experience, and I doubt if it is the experience of many who have had to deal with these cases. Penetration depends a good deal on the thickness of the glass, its velocity on impact, and whether the glass hits the tissues edge-on. The cases with which we had to deal were wounded by ordinary window-glass of dwelling-houses, and most of those dealt with as in-patients suffered not only from superficial but also from penetrating wounds. It was obvious from the bombing raids of 1940–1 that glass could penetrate deeply, and early on you were kind enough to publish some observations of mine giving examples of such wounds (*B.M.J.*, 1940, **2**, 719). The same holds true for glass injuries caused by flying bombs—only all the more so, as one would expect from the greater blast effect.

With recent casualties we have found glass wedged in the bones of the skull, embedded deeply in the neck, in the chest causing a sucking wound, and in the abdominal cavity. It has been found in the muscles of the extremities and in the muscles of the back, and has cut right through tendons. It has severed main arteries and nerves, and, according to Romanis (*Practitioner*, Aug., 1944), most of the big arteries of the body have been cut by flying glass. Two of our neck wounds involved the trachea on its lateral aspect: in one the injury was suspected owing to the air suction in the wound, and the glass splinter was found projecting into the trachea; in the other case the left recurrent laryngeal nerve was injured, but the real cause was not discovered until the patient coughed up the splinter. The abdominal injuries included laceration of the transverse colon, the caecum, and the mesentery. In one case post mortem it was found that glass had traversed the greater part of the lung, pierced the diaphragm, and caused a large haematoma in the liver. But it is unnecessary to go on citing cases. As a rule glass shows up well on *x*-ray films, and many radiographs bear evidence of the depth to which glass splinters may penetrate.

I agree with Dr. Bell that it is unwise to attempt to deal seriatim with multiple surface wounds. Excision of these as recommended by some is out of the question, and the wounds are sometimes so numerous that one case alone would provide enough emergency work for two or three surgeons. Such treatment would undoubtedly re-establish shock, which one has probably laboured hard to counteract. In any event, with present-day methods of counteracting sepsis these wounds do not require elaborate or prolonged surgery. Wounds of the face sometimes require attention on account of haemorrhage, and if conditions allow should be cleansed thoroughly to rid them of dirt or grit; otherwise staining remains. Prof. Kilner (*Practitioner*, Aug., 1944) recommends washing with C.T.A.B. (cetavlon), hydrogen peroxide, and saline, and if dirt or grit is still present removing with a fine curette or nail brush. In general it is surprising how tissues whose viability is in doubt often recover. An elderly man had the cartilaginous portion of his nose almost completely shorn away. It was found wrapped in a handkerchief but still attached by a central bridge of skin at the philtrum. It was cleansed and stitched back in position and it healed without loss of tissue.

But one must be alive to the possibility, or rather probability, of glass penetrating deeply, and what on the surface may appear a simple puncture may go deep and involve important structures. *X*-ray examination will help then and later. There must be a goodly number of people going about with glass in their tissues, and if the surgeon is sometimes puzzled by an unusual tumour he may find on removal that it proves to be glass.—I am, etc.,

London, W.1. MICHAEL J. SMYTH.

Insulin Syringes

SIR,—May I observe in your columns the confusion occasioned by the presence of an "insulin syringe" provided for the simplification of insulin dosage. Insulin is now dispensed in strengths of 20, 40, and 80 units per c.cm. The syringes are all marked in graduations equivalent to 20 units per c.cm. I have had two recent examples of dangerous inaccuracy of dosage when the carrying out of the injections was delegated to persons about the household.

The first was a new case living a few miles out in the country. I provided the family with the necessary equipment, including a bottle of insulin of 40 units per c.cm. strength and an ordinary c.cm. syringe, graduated in c.cms. and minimum marks, and advised them that it was not an "insulin syringe." I then asked the district nurse to co-operate by giving the injections and teaching the patient's wife to give the injections. The patient having refused to go to hospital, I proposed to start with a low dosage—10 units twice a day. In a very few days I was asked for a further supply of insulin. The insulin provided should have lasted about a week. On investigation I found that the nurse had been using the minimum graduations as insulin unit graduations, drawing the insulin up to its 10 minimum mark, and this was equivalent to 24 units of insulin, which was what the patient was receiving twice a day. This accident saved a good deal of time in finally stabilizing the patient's glycosuria at 36 units twice a day.

The other case was one that I had taken over and found was having two doses a day of 40 and 35 units of protamine insulin of 40 units per c.cm. strength. The patient was not well though more or less sugar-controlled. I sent him to a consultant for advice as to changing his treatment, and he was immediately changed to the same dosage of soluble insulin with immediate improvement in his health and also improvement in his sugar control in the urine. But on this new treatment I was very soon asked for a further supply of insulin, so I asked to be shown the syringe used and how far up the insulin was drawn. The syringe was a 2-c.cm. "insulin syringe," marked in c.cms. and insulin units up to 40 in the 2 c.cms., and I was shown that for the morning dose the insulin was drawn up to the c.cm. (40 units) mark. In other words this patient had been having, unknown to himself and his doctor, 80 units of protamine insulin in the morning and 70 in the evening. Small wonder that he had not been feeling well. But neither the consultant nor myself found out the reason for his ill-health immediately.

Apparently the sum of simple proportion required to calculate the correct dose of insulin is too complicated even for the best-educated sometimes in these days of concentrated insulin solutions when using the so-called "insulin syringe." I would therefore advocate that the best syringe for insulin injections in the home is the standard syringe marked in c.cms. and tenths of a c.cm., because the calculation required in making up the dose from whatever insulin is provided is more simple.—I am, etc.,

Thetford, Norfolk. T. L. OLIVER.

Vitamin B in Post-operative Treatment of Head Injuries

SIR,—One of the many purposes for which the vitamin B complex can be employed is in the post-operative treatment of head wounds, such as the penetrating cranial injuries we are seeing due to the campaign on the Western Front. Such injuries are commonly followed by a psychological state involving a shallow emotivity and undue dependability, a sort of vaguely juvenile state, difficult to describe but readily recognizable by observers who have seen any quantity of these cases. Some of these cases are complicated by schizoid tendencies, such as negativism, though these latter tend to be fleeting and are not exhibited in any dramatic degree of development. The administration of the vitamin B complex unmistakably accelerates the return to normal of these cases. It also tends to dissipate more quickly the disorientation and confusion exhibited in a proportion of them. Where these latter symptom complexes are displayed the addition of extra nicotinic acid to the regime is advisable. The preparations used are tab. benerva co., the dosage being, for the most part, two tablets three times a day. Tablets of nicotinic acid (mg. 50) three or four times daily were added in some cases.

The improvement in the physical condition of cases so treated is quite unmistakable. We have noticed a particularly striking improvement where speech difficulties were associated with lesions in the neighbourhood of Broca's area. One patient in particular, able to enunciate indistinctly only husky monosyllables, chiefly affirmatives and negatives, was able after three weeks to hold a short but clearly distinct conversation. Making every allowance for the fact that his improvement may have stood in a merely coincidental relationship with the administration of vitamin B, we feel the suddenness of the improvement and its rate of acceleration subsequent to the administration of the vitamin B can only be ascribed to the effect of the latter.

One case where confusion was a marked feature of the condition improved considerably with vitamin B, which later, due to an error, was then not given for several days. During this period the patient's condition slumped badly, but showed considerable amelioration when the vitamin was again utilized.

In the experience of one of us vitamin B is also efficacious in clearing up the symptoms of the post-concussional syndrome, where the latter is not accompanied by penetrating wounds or tangible intracranial injury.

We realize to the full that we have not accumulated sufficient data to write dogmatically or to produce a paper on the efficacy of the vitamin B complex in cases of head injury. We are, however, sufficiently satisfied with its beneficial effects to feel that it is worth an extended trial. Our main motive in writing this letter is to stimulate the interest of others in this particular treatment of a type of injury of cardinal importance at the present time.—We are, etc.,

A. GUIRDHAM.
F. KOHN.

Pseudo-migraine and its Relation to Neurofibrositis of the Scalp

SIR,—I was interested in the observation made by Dr. Pether on the effect of barometric changes on the recurrence of migraine in some of his patients. It is, of course, a well-established fact that patients who suffer from the various rheumatic ailments are most susceptible to barometric changes, and I find that when seen they will say that their pains were much worse on days when the weather was most changeable. There can be no doubt that those patients who suffer from neurofibrositis of rheumatic origin feel barometric changes the most. And so it would appear that many so-called sufferers from migraine who have attacks during barometric changes are really suffering from neurofibrositis of the scalp, which gives rise to headaches of a migrainous character exacerbated by emotional disturbances, barometric changes, dietetic errors, and exposure to inclement weather.

The condition is due to a fibrositis of the scalp, and the painful spots are usually found in the temporal muscles, above the eyebrows, and in the tissues at the origin of the sterno-mastoid muscles at the base of the skull. After firm digital pressure has been applied to any of these spots the patient will complain that this manipulation is causing a headache, similar in character to those from which he suffers.

After the acute attack has subsided massage over the tender spots should be started, using the tips of the thumb and index finger of the right hand. A vigorous side-to-side movement is used over the tender spots for a few seconds only, as at the first sitting it is extremely painful. This treatment should be carried out on alternate days, using, at each subsequent sitting, deeper and more prolonged massage, which now can be more easily tolerated. Within a few days the headaches will be far less severe, and within a month the patient should be cured. The operator will feel that the tissues around the painful spots become, after three or four treatments, much softer, thus demonstrating that the fibrositis is being resolved into healthy tissues; this coincides with the amelioration of headaches.

It would appear that the cause is metabolic in origin, so that it is advisable for patients to go on a purin-free diet, and while they are under treatment to keep their heads warm. Many sufferers from chronic headaches that are not migrainous in character will also derive great benefit from this type of treatment. In this category would be placed patients suffering from headaches following trauma and many who suffer from headaches which they think are due to hyperpiesis. In the latter the painful nodules are found at the origin of the sterno-mastoid muscles at the base of the skull.

In true migraine there are no tender nodules on the scalp.—I am, etc.,

London, W.1. LOUIS MOSS.

Latent Mastoiditis in Infancy

SIR,—Frequent reference has recently been made to latent mastoiditis. It is stated that in infants advanced mastoid infection is commonly present without otoscopic signs of middle-ear disease.

Patterson and Stewart Smith (Nov. 18, p. 659) report 71 cases with evidence of mastoiditis post mortem, only 12 of which showed clinical otitis media before death. Leathart (Nov. 11, p. 637) apparently discards otoscopic signs in favour of a bald patch on the back of the head and glands in the posterior triangle of the neck. Alexander and Eiser, in their excellent paper (Sept. 30, p. 425), found purulent otitis media in 60 out of 140 cases of infantile D. and V. Leathart contends that the majority of the remaining 80 cases, in fact, had mastoiditis without otoscopic signs.

Is it, therefore, to be accepted that this delicate membrane, the tympanum, which alone conceals a suppurating cavity, frequently shows no detectable change? It is generally agreed that the mastoid antrum and the middle ear in infants should be regarded as one cavity, and though, theoretically, obstruction in the aditus may lead to resolution in the one and progression of the infection of the other, at necropsy these infants invariably have pus in middle ear and antrum. It is the experience of many observers that the tympanum does, in fact, show inflammatory signs in the great majority of infants suffering from the common febrile illnesses, whether gastro-enteritic or respiratory tract infection. In a recent closed epidemic of severe gastro-enteritis involving 13 infants under 9 months of age, definite otoscopic signs of otitis media were found in all save one. These cases were not all in the suppurating stage when myringotomy was performed, but in more than half frank pus was found, and the majority of the remainder developed purulent otorrhoea during the ensuing two days. It is suggested, therefore, that the otoscopic signs of middle-ear disease in infants are not as unreliable as Leathart and others believe.

Is it not rather that our examination of the tympanic membrane is imperfect? First, it is not easy to obtain a complete unobstructed view of the whole drum in a good light, and the conclusion reached with an indifferent view can be most misleading. Secondly, a frost-like layer of desquamated epithelium (or drying exudate) commonly covers the drumhead in acute cases, which gives it a false white appearance. Only when this is gently removed with a moist swab is a fiery-red membrane revealed. Swabbing of a normal drumhead, even in a crying baby, never reproduces the appearance of inflammation. Thirdly, after a few days of active infection in the middle ear the tympanum wears a greyish thickened appearance with very little bulge, and only slight dulling of the lus-

which may be most deceptive. This drum, which is tough to incise, invariably conceals frank pus. These signs are well known to those who have experience of infants; may there not be others equally misleading?

It is important that the frequency of otitic infection in the infant be more widely recognized, and vital that its relation to D. and V. be better understood. The dogmatic statements of Mr. Leathart on this matter, however, may do more harm than good.—I am, etc.,

Newmarket. R. ARDEN JONES.

SIR,—The article by Drs. Patterson and Smith is an important one, showing as it does the extremely great frequency with which pus is found post mortem in the mastoids of infants. For the past 12 months I have had the privilege of assisting Mr. P. W. Leathart in his work at the Royal Liverpool Children's Infirmary, and I venture to suggest that a large number of the cases considered in this article would never have come to post-mortem if an attempt at mastoid exploration had been made during the illness.

It is stated: ". . . none of our patients had any of the local complications which might reasonably be expected if the pus found in the mastoids was the result of an acute primary active process, and, moreover, so virulent as to cause death from toxaemia and dehydration." Mastoid infections in infants are rarely of the acute fulminating type; hence the difficulty of diagnosis. They nevertheless do great harm by acting as a low-grade subacute or chronic septic focus with toxic absorption, which, in the delicate infantile organism, often precipitates diarrhoea and vomiting. This condition is then maintained until either the mastoid infection resolves or the infant dies. Unfortunately, without operation, resolution is uncommon.

It is not contended that diarrhoea and vomiting alone is invariably the means to death in mastoiditis of infancy, but that it is very commonly so. The chronic septic absorption may in a smaller number of cases result in a susceptibility to respiratory infections, marasmus, and sometimes septicaemia as terminal events. The article fully supports this view, as in the diarrhoea and vomiting group 71% of cases had mastoid pus. This is quite considerably more than in the other groups considered, which showed 56%, 50%, and 33%. The diversity of organisms found in no way affects the argument. Any septic condition within the mastoid will provide toxins.

Drs. Patterson and Smith write: "Finally, the highly infectious nature and the mode of spread of gastro-enteritis in infants' wards in hospital form, we think, one of the strongest points against latent mastoid infection, being the key to the aetiology of this condition." True, infective gastro-enteritis of the type mentioned is, in our experience, rare, and the victims almost invariably recover providing a mastoiditis secondary to the vomiting is not contracted.

The operation for mastoid drainage in an infant can be performed with very little disturbance to the patient. It is unfortunate that this article (drawing as it does conclusions not justified by the facts) discourages what is so often a life-saving procedure.—I am, etc.,

Liverpool. H. ZALIN.

Artificial Insemination

SIR,—As this seemed exotic and unlikely to appeal to the people of this country, one felt it was better to remain silent. The fact that the secretary of the M.D.U. thinks it necessary to prepare safeguards—from a legal standpoint—for doctors participating makes one anxious to assess the profession's attitude. A statement in the *Journal* of Nov. 25 by Dr. Malleson affirms that "recent correspondents find fault with the procedure from the point of view of the Catholic Church (whose dictates on other obstetric matters are not accepted by the profession at large)." It might be remarked here that the Church promulgates and upholds the moral law and that artificial insemination is not a mere obstetric matter. An epitome of the views of an eminent Catholic theologian will make this clear. I asked him about this and about the statements in the *Journal* that the Church had not spoken on the subject.

This is not a mere medical question. To regard it as such is to miss the important side—that this matter is bound up with human relations, vital human relations. The emphasis must be on human relations, as opposed to the reproductive relations of animals. There is nothing so fundamental in human society as the union of man and woman. Everything else is built on that. Human love unites husband and wife, permeates the family, and holds together human society. The question of the union of the sexes and the procreation which follows is a sociological question in its widest sense. Artificial insemination, therefore, raises a sociological problem in which the medical profession as such has only a minor role to play. The Church, as the moral guide of the many millions of its members, has a duty as well as a right to pronounce on the moral aspect of all problems of human conduct, whether they be problems of purely individual conduct or problems that involve social relations. On this question of artificial insemination the Church has given a carefully considered decision. The Church pronounced it to be morally wrong in 1897. The reasons (not all of which apply to every case) are mainly: (1) A woman must be inseminated by her husband. They are two in one flesh and belong to one another. An invasion by other semen is a violation of their sacred union. (2) Insemination is not a medical operation but the climax of the physical expression of love. (3) Artificial insemination implies onanism (solitary self-abuse or masturbation), which is immoral.

These are the main direct reasons, but in addition, and partly following from these, one may add that artificial insemination strikes at the very foundation of the family, for the family is built up around the father and mother whose co-ordinated love and efforts direct the offspring, who are flesh of their flesh. There must be this vital link binding husband, wife, and children.—I am, etc.,

Boscombe, Bournemouth. P. P. MCKINNEY.

SIR,—To reinforce the opinion so reasonably expressed by Dr. Joan Malleson (*Journal*, Nov. 25) may I quote one case that supports her arguments indisputably, and proves that the love of children produced by artificial insemination is of the same quality and subject to the same variations as those produced in the usual manner.

A married couple whose home life was very near collapse undertook artificial insemination as a last resort in spite of the prognostications of their priestly advisers. It is impossible to describe the mental and physical improvement that has resulted from the production of a child and the change in the atmosphere of the home during gestation and after the arrival. A second child was produced after an interval of two years in the usual manner. Both are healthy, strong, and intelligent.

A question that is often asked is, Will the child of artificial insemination be the same physically and mentally as one produced normally?

The veterinarians have had much more experience in these investigations, and with more accurate knowledge the results look more hopeful but are still unsatisfactory, though the famous horse Rocksand was produced by artificial insemination and won the Derby, the Guineas, and the Oaks—which undoubtedly require speed, stamina, and intelligence.—I am, etc.,

Bath. J. HOBART NIXON.

SIR,—Many people look upon medical practitioners as sane and unbiased individuals, capable, through long years of training, of assessing a situation on its merits without undue prejudice or emotional over-emphasis. It is fortunate, perhaps, that the *Journal* has a limited circulation, for some of the letters that have been printed concerning artificial insemination prove how unreliable many of our colleagues are when medical questions with an ethical fringe are concerned. Those who invoke outworn religious dogma as a logical criticism of a new method of increasing the birth rate and bringing some degree of happiness to a barren couple are clearly swayed out of all reason by purely emotional (and therefore limited to personal) values. If such "reasoning" is of value it might be of interest to learn the views of any sterile doctors. Would they, I wonder, be so shrilly antagonistic? Incidentally, it is of interest to note that two women doctors—namely, Margaret H. Jackson and Joan Malleson—have recently written most intelligent letters in favour of this limited, but most useful, procedure.

The mental gymnastics indulged in by some doctors who adhere unrestrictedly to religious dogma are quite astounding. I have never been able to comprehend the odd and incongruous position of the Roman Catholic gynaecologist who advises against contraception regardless of all other factors in a given case. I recently referred a patient for advice on contraception to a well-known gynaecologist without knowing that he was an R.C. The patient received a short address on the evils of contraception and then departed—she had no time to tell him that she was living in a strange town where her husband was temporarily billeted, that accommodation was extremely scarce, and that the only available "digs" had been described by the landlady as "very quiet, with no animals, children, or other nuisances!" What chance had she of producing an infant in congenial and suitable surroundings? Certainly much less than the gynaecologist, who was living in his own home and who could, presumably, have a baby every year as a logical outcome of his own beliefs. Surely as doctors we should in all matters consider individual cases—i.e., our patients—rather than spout at them our own, often distorted, ideas, that are frequently legacies of the unenlightened doctrines of the Victorian era.

As individuals many may not yet be emancipated from this incomprehensible dogma, but when shall we learn to present an impartial case to our patients, who are entitled to hold views of their own?—I am, etc.,

IAN G. WICKES.

SIR,—May I be permitted to reply to the letter of Dr. Joan Malleson in your issue of Nov. 25. She pleads the "hard case" most eloquently, which, if I may say so, does more credit to her sympathies than to her good sense. But it is still a truism that "hard cases make bad law." The Catholic Church condemns artificial insemination with donated semen on moral grounds, as she has condemned artificial birth restriction and euthanasia, which are likewise founded on the "hard case." And may I remind Dr. Malleson of another true statement—namely, "the end does not justify the means"—and that, however much one may sympathize with the childless married couple (and the Church regrets this more than Dr. Malleson), it is nevertheless unjustifiable to infringe the moral law on their behalf, however attractive the results may appear to be. Dr. Malleson, in fact, paints a very appealing picture of the benefits which are supposed to accrue from this practice, but may I suggest that this is all very theoretical and is no doubt coloured by that emotionalism and lack of objectivity which she states characterizes the opposition.

It should be self-evident that a country's social health is dependent on the family as the social unit. The Church's pronouncements on the moral law have as one of their main objectives the preservation of this unit, and her condemnations are directed against those who would endanger it. Artificial insemination, using donated semen, entails self-abuse on the part of the donor, and this, when wilfully and deliberately carried out, is a moral offence no matter what the objective is. In the case of the woman inseminated, I should think the condition is closely akin to adultery in that the semen in her uterus is not that of her husband. It is surely obvious that both of these prerequisites constitute a grave danger to healthy family life.

It is interesting to note that the Catholic Church is frequently attacked for opposite reasons at the same time. In recent years she has been howled at by the "birth control" fanatics for objecting to artificial birth restriction, and now her advice is scorned because she does not approve of unnatural means of promoting childbirth. It is in my opinion probable that this demand for stud-farm procreation follows on the evil results of so-called birth control, which, to quote the late G. K. Chesterton, really means "less birth and no control."—I am, etc.,

Edinburgh. JOSEPH PHELAN.

SIR,—May I put clearly the difference in major premise which is between those who have recently written against the use of artificial insemination and those who appear to favour it? Argument at cross-purposes and resultant confusion of thought may thus be avoided. One group would assert that knowledge of physiological facts as a result of research or invention implies the right to use such facts for any end deemed useful to man. The other group would say that man should be guided in his actions by certain primary principles which are independent of his own changing subjective notions, *as well as* by what seems to him right and useful. In other words, that the end does not always justify the means even in hard cases. This attitude, which may be thought hard, involves a belief that departures from principle are "sinful" in the sense that if adopted with whatever good intention they will result ultimately in harm not only to others but also to those who adopt them. Dr. Ladell admits that masturbation is a departure from the normal, but finds justification for it in certain circumstances for those who have reached adult psychological development; can he not see that he could not logically deny the application of the same argument to homosexuality among troops normally heterosexual? This last may serve to indicate the value of principles and the unexpected secondary sequelae when they are jettisoned apparently for a good reason.—I am, etc.,

Edgware, Middlesex. F. HARWOOD STEVENSON.

A Renal Service

SIR,—May I support Dr. Osman's plea for a national renal service? Little progress has been made in the treatment of those diseases of the kidney first described by Bright. There is no hospital in the London area which has a ward set aside for the study of nephritis, and I am doubtful whether there is one in the Provinces. There is an obvious need for a hospital of at least 100 beds in London in which to treat medical and surgical diseases of the genito-urinary tract.—I am, etc.,

London, W.1. CLIFFORD MORSON.

Extra Milk for Patients

SIR,—My experience in trying to obtain extra milk for a patient who needs it very definitely, though her case does not come within any of the categories entitling her to be supplied with two pints daily, raises issues which must have considerable general interest. I have the impression that I—and my patient—are being penalized because I have not simply certified her as suffering from gastric ulcer, thus saving trouble to the officials concerned. On Oct. 25, having been informed that the allowance of 2 pints daily must cease in a month's time unless I could supply a certificate in accordance with regulations, I wrote as follows to the officer in charge of the Food Office at B.:

"I am very appreciative of your courtesy in dealing with this rather difficult case, and of the fact that you are in no way responsible for the regulations which it is your duty to administer. Since I understand, however, that this report is to be forwarded to a medical committee, I wish to take the opportunity of protesting to them (1) that I have not at any time been notified of the existence of a committee competent to vary the regulations in special cases, and (2) that I am compelled to submit an intimate medical report about a patient to a non-medical officer.

"Mrs. A. is a married woman aged about 55 who has long lived apart from her husband. She is a very difficult personality and has been under treatment for twenty years or more by various physicians . . . and for many years latterly by myself. She is what may be called a professional invalid, enjoying (almost literally) poor health both mentally and physically; she calls her mental condition, more or less correctly, a neurosis, and I shall be glad to give further details of this if required. Her physical condition has been poor throughout the time I have known her. I understand that she was treated for several attacks of severe colitis before she came under my notice. She has an extreme degree of general enteroptosis. For more than fifteen years she has lived on a special diet, consisting chiefly of bread-and-butter, milk, fish, chicken and oxtail, with a little minced raw apple and occasional prunes. She has declared herself unable to retain any other articles of diet, and this seems to be a fact, whether the mechanism is physical or psychological. Under the restriction of a war dietary she has not materially altered her menu but has simply gone without the articles which were unobtainable; her height is 5 ft. 8 in., and she has never to my knowledge weighed more than 9 st.; during the war it has dropped by 1 st. and is now 7 st. 6 lb. with clothes, despite the fact that up to the present I have contrived (without perjuring myself) to obtain for her two pints of milk daily. She has no discoverable fat and is very anaemic, and I believe that she will die from inanition or otherwise within two or three months if she is not allowed this extra nourishment. I hope therefore that the committee may think fit to permit her to be supplied with this permanently, since no improvement in her condition is to be expected."

Some three weeks later I was informed by telephone that higher authority had rejected the appeal on the ground that no increased ration could be permitted to anyone who voluntarily refused to consume the rations provided. Being informed that it was not in order for the local office to put this into writing, I took up the matter immediately by telephone with the Regional Office, Tunbridge Wells, asking both that the statement made should be sent to me in writing and that I should be put into touch with a medical officer competent to discuss the matter on behalf of the Ministry. I stated my intention to publish the correspondence. I have not heard from any medical officer, but I have now received a letter from Mr. B. Knott of the Ministry of Food, Rationing Division, Colwyn Bay, the main part of which runs as follows:

"I understand you have approached the Divisional Food Office, Tunbridge Wells, about the refusal of your application for a priority supply of 2 pints of liquid milk a day for Mrs. A. of B.

"I would point out that your application and detailed statement of Mrs. A.'s condition were carefully considered by the Food Rationing (Special Diet) Advisory Committee of the Medical Research Council, who guide the Ministry in all matters concerning invalid diet. They are firmly of the opinion that no special rations or allowances of foodstuffs should be granted to people suffering from a neurosis or whose condition is psychological rather than physical in origin. They infer from your medical certificate that your patient is suffering from no organic disease which would prevent her from eating ordinary food, and in these circumstances they are unable to recommend that your request should be granted.

"The Ministry must of course abide by the authoritative opinion of its advisers, especially at the present time, when supplies of milk are so restricted, and it is particularly important that priority allowances should only be granted where they are a medical necessity.

"I understand that your patient Mrs. A. was allowed a priority supply of 2 pints of liquid milk a day when she submitted a medical certificate to the local food office some months ago stating that she was suffering from Classes II (c) and II (d) of the Schedule of Conditions qualifying for priority supplies of milk. This grant was, I am afraid, made in error. Your patient can only receive a priority supply under one class of the schedule, and her 'priority' must now be adjusted accordingly. Should you feel that you can justifiably certify this lady under Class II (c) or Class II (d) of the Schedule of Conditions she will be supplied with 7 pints of liquid milk a week. This, however, is the most the Ministry can allow, since the medical advisers consider that this provision is quite adequate for the treatment of people with either or both of these conditions."

The only comments I wish to make are: (1) that my offer to give further information is ignored; (2) that I have given evidence of physical ill-health; and (3) that Mr. Knott being a non-medical officer may quite possibly have never heard of fatal cases of anorexia nervosa nor of the acute melancholics who die if they are not tube-fed with milk. The inelastic application of these regulations constitutes a temptation to strain the truth in the interest of one's patient, and I should be grateful for any suggestion as to a more satisfactory method of dealing with such a case.—I am, etc.,

J. NORMAN GLAISTER.

Obituary

EDWIN GOODALL, C.B.E., M.D., F.R.C.P.

We regret to announce the death on Nov. 29 at Hove of Lieut.-Col. E. Goodall, for many years medical superintendent of the Cardiff City Mental Hospital and afterwards honorary consulting physician to that institution and (for psychiatry) to the Cardiff Royal Infirmary. He had been lecturer in mental diseases at the Welsh National School of Medicine, and until his retirement from active work was a leading figure in the world of psychiatry. Everything that pertained to the pathology of the psychoses attracted and held his forward-looking mind, and no one felt keener disappointment when progress slackened at any point.

Edwin Goodall, son of E. B. Goodall, a Calcutta solicitor, was born in 1863 and studied medicine at Guy's Hospital, graduating M.B., B.S.Lond. in 1886 and M.D. in 1888, and taking the M.R.C.P. a year later. After postgraduate work in the University of Tübingen he became pathologist and assistant medical officer to the West Riding Asylum at Wakefield; he was next appointed medical superintendent of the Joint Counties Asylum, Carmarthen, and later medical superintendent of the Cardiff Mental Hospital, whence his reputation spread far and wide as a pioneer in the scientific study and treatment of mental disorders.

At the Annual Meeting of the B.M.A. in 1903 he held office as vice-president of the Section of Psychiatry; in 1911 he was president of the Section of Neurology and Psychological Medicine, and at the Cardiff Meeting in 1928 he again presided over the same Section; he was also a past president of the Section of Psychiatry of the Royal Society of Medicine, and a Foreign Member of the Society of Medical Psychology of Paris. He was elected a Fellow of the Royal College of Physicians in 1903, delivered the Croonian Lectures on the pathology of mental disorders in 1914, and served on the Council of the College for two years. His presidential address to the Royal Medico-Psychological Association, on conditions—bacteriological, toxicological, and haematological—bearing upon the psychoses, appeared in the *Journal of Mental Science* in 1923, and his Maudsley Lecture on the pathology of insanity in 1927. He was largely responsible for the opening of an out-patient department for early mental cases at Cardiff. A problem that deeply concerned him was how to get hold of the schizophrenics of psychiatry and the encephalitics of general medicine at the earliest possible stage and bring them in touch with research centres. Under his guidance the Cardiff City Mental Hospital came into close working association with the Cardiff Royal Infirmary, the latter being equipped with the necessary staff and laboratory facilities and authority to conduct animal experimentation; apparatus for collecting material was kept at the pathological laboratory of the Infirmary as well as at the Mental Hospital. A point he made over and over again was that the psychiatric clinic must be an integral part of the general hospital.

Edwin Goodall did excellent work in his branch of medicine during the last war, when he held the rank of lieut.-col., R.A.M.C. For this he was mentioned in dispatches and created C.B.E. in 1919. He kept up with foreign work in psychopathology, carefully assessed its bearings upon diagnosis and treatment, and set out his conclusions in clear and forceful language.

W. A. COCHRANE, M.B., F.R.C.S.Ed.

Mr. William A. Cochrane, the well-known Scottish orthopaedic surgeon, died at the age of 51 on Nov. 30 in Edinburgh, where he was born and educated and held many appointments. From Daniel Stewart's College he entered the University and graduated M.B., Ch.B. in 1915, afterwards serving in France and Flanders with a commission in the R.A.M.C. as a battalion M.O. His war experience filled him with a desire to restore the maimed to useful life, and on his return from the B.E.F. in 1918 he was appointed to the orthopaedic staff at Bangour Hospital, then the main Services orthopaedic centre for Scotland, and he there came under the influence of Sir Harold Stiles, the chief surgeon, and Sir Robert Jones, who visited the hospital as consultant. After serving there he spent some time in the United States as temporary assistant in orthopaedics at the Massachusetts General Hospital, Boston, working in Dr. Goldthwait's clinic. He returned to Edinburgh in 1921 well equipped for his chosen branch of the profession and took the F.R.C.S.Ed.

Cochrane played an active part in the development of the Fairmilehead Hospital for Cripples (now named after Princess Margaret Rose), of which he was surgeon in charge, and did much to create a network of orthopaedic clinics in the south-east of Scotland. In 1937 he became a member of the National Advisory Council for Scotland on Physical Training and Recreation; he was also one of the orthopaedists for the south-east area of the Scottish Command. In Edinburgh, where he practised, he was appointed associate assistant surgeon in orthopaedics at the Royal Infirmary and lecturer on that subject in the University. Cochrane joined the B.M.A. in 1924, was a member of the Orthopaedics Group Committee from 1938 onwards, and for twelve years acted as assistant honorary secretary of the Edinburgh Branch for the purpose of clinical and scientific meetings. At the Annual Meeting of the Association held at Winnipeg in 1930 he was vice-president of the Section of Orthopaedics. He was the author (jointly with

P. D. Wilson) of *Fractures and Dislocations*, 1928, and of a textbook on *Orthopaedic Surgery*, 1926.

A first-rate golfer, he was well known on Edinburgh and East Lothian courses as a prominent player in club competitions up to the outbreak of the war. Tribute to him as sportsman and friend, and as pioneer in the development of orthopaedic surgery in Scotland, has been paid by a colleague writing in the *Scotsman*.

We regret to announce the death on Nov. 9 of Dr. WALTER MARTIN ASH, O.B.E., county medical officer for Derbyshire. He was born at Castle Cary, Somerset, on March 27, 1889, and from Blundell's School, Tiverton, went to the London Hospital. During student days he played rugby football for his hospital and for Somerset. He graduated M.B., B.Sc. with honours in anatomy and physiology in 1912, held five resident posts in succession at "the London," and served throughout the last war as temporary surgeon lieutenant, R.N. In 1920 he obtained the D.P.H. of Manchester University after taking a course in sanitary science there, and entered the Public Health Service; before his promotion to the senior Derbyshire post he had been assistant county M.O.H. for Lancashire and school medical inspector, and deputy county medical officer for Middlesex. Dr. Ash took the F.R.C.S.Ed. in 1923. He published a report on concurrent vaccinia and variola, and articles on goitre, on hereditary microphthalmia, and on school closure in mild smallpox epidemics. He was awarded the O.B.E. for services to Civil Defence in the Birthday Honours list of 1943. Dr. John Cahill writes: One morning in 1941 Dr. Harold Fernandes, medical superintendent of Derbyshire County Sanatorium, informed me that Dr. Ash was to call that day on a visit of inspection. I received the news with very mixed feelings indeed. The efficiency of Ash was almost a legend, and, in addition, he was reputed to be somewhat of a disciplinarian. I was to discover, however, that this man of masterful manner and rather severe expression knew how to unbend on occasion. Although his health was at that time seriously impaired, no one less like an invalid can be imagined. His conversation raced through memories of Russell Howard, memories of days spent at cricket and football, and memories, amusingly humiliating perhaps, of sparring bouts in which the late Jim Driscoll, round after round, had prevented him from landing a punch. Later, we saw quite a lot of him and always looked forward to his visits with pleasure. Ash, a former surgical registrar, retained a keen interest in surgery and loved to steal occasional hours from his work to watch operations. He once said that *Gray's Anatomy* was his favourite bedside book (a choice which I found altogether strange). He also possessed the rather uncommon gift of leadership (in the good sense of the word), as a result of which he maintained almost a family spirit among the medical officers of the Derbyshire County Council.

WICLIF MCCREADY, F.R.C.S.I., who died at his residence in the Ulster countryside on Oct. 29, was the third son of the Rev. E. M. McCready (himself a graduate in medicine), Rector of Magheradroll, Co. Down. Born in 1880 he was educated at "Inst," Belfast, and Trinity College, Dublin, where he took his B.A. degree with a senior moderatorship and gold medal in English literature. Entering Queen's College, Belfast, in 1902 he qualified M.B., B.Ch. in 1907. After a term as resident in the Royal Victoria Hospital he studied ophthalmology and otology in Vienna, and on his return in 1910 was at once appointed ophthalmic surgeon to the Belfast Hospital for Sick Children and assistant surgeon to the Ophthalmic Hospital, to both of which he was consulting surgeon at the time of his death. In the war of 1914–18 he served as a combatant officer with the 10th Battalion, Royal Irish Rifles, until 1916, when he was transferred to the R.A.M.C. to act as an ophthalmic specialist. In 1933, much to the grief of his many friends and patients, a serious breakdown in health compelled his retirement from practice, and he went to live on the farm overlooking the waters of Strangford Lough which he had brought some years before. There he and his charming wife dispensed a generous hospitality to their host of friends, and when one was feeling "ruffled" with a serious case or "difficult patient's friends" it became the customary thing "to run down to see Wic. for an hour," sure that this would mean a return to work with a different outlook on things in general. Before his retirement yachting was his principal hobby, and there is something fitting in the fact that he died quite suddenly while typing out the log of one of his last cruises up the West Coast. The sympathy of the profession in Northern Ireland for his widow and only son, now serving with the C.M.F., is whole-hearted and widespread.—R. H.

No. 47

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Nov. 25.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	41	4	19	2	2	43	3	30	6	—
Deaths		—	1				2	—		
Diphtheria	616	23	209	133	19	732	47	188	92	45
Deaths	8	1	1	2	—	15	1	2	2	—
Dysentery	380	44	82	2	1	147	26	44	—	2
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	—	—	—	4	—	2	—	—
Deaths		—					—			
Erysipelas			62	9	3			57	9	—
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				28					70	
Deaths	38	2	9	4	1	39	5	15	6	7
Measles*	7,137	110	425	19	259	518	49	65	30	3
Deaths	10	—	—	—	—	—	—	—	—	—
Ophthalmia neonatorum	81	5	16	—	—	75	2	13	—	—
Deaths										
Paratyphoid fever	1	—	5 (B)	—	—	2	—	1	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal†	755	24	10	1	8	1,647	121	65	1	1
Deaths (from influenza)	27	2	0	—	—	375	29	43	8	5
Pneumonia, primary			314	14				326	13	
Deaths		34		9	13		98		14	19
Polio-encephalitis, acute	2	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	10	—	—	2	2	13	2	1	3	—
Deaths		—					—			
Puerperal fever		6	15		—		1	18		—
Deaths										
Puerperal pyrexia‡	165	11	17	—	—	166	7	16	2	1
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	2,350	60	348	32	117	3,157	240	402	30	94
Deaths	1	—	—	—	—	5	—	—	1	—
Smallpox	—	—	—	—	—	—	—	1	—	—
Deaths				—	—				—	—
Typhoid fever	4	1	—	9	1	—	—	3	7	3
Deaths	1	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,388	56	151	41	10	1,800	163	225	38	29
Deaths	9	1	1	1	—	16	3	4	—	1
Deaths (0–1 year)	358	41	65	28	13	394	44	81	31	34
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	5,118	760	697	220	132	6,863	1,055	793	221	172
Annual death rate (per 1,000 persons living)			16·0	14·3	§			17·9	14·5	§
Live births	6,772	598	907	315	251	5,635	709	807	410	280
Annual rate per 1,000 persons living			18·4	20·4	§			16·5	27·0	§
Stillbirths	192	11	37			191	18	36		
Rate per 1,000 total births (including stillborn)			39					43		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* returns for measles, dysentery, and acute pneumonia were higher than last week by 1,136, 163, and 129 respectively. Only small fluctuations were shown by the other notifiable diseases.

There were 20 fewer cases of diphtheria than last week recorded in Durham, and 19 fewer in Glamorganshire. However, in the combined regions of London, south-east, south-west, south midland, and the eastern areas the notifications rose from 83 to 120. In these areas whooping-cough notifications rose by 74, but in the rest of England and Wales they fell by 96.

Acute pneumonia was slightly more prevalent throughout the country. Measles showed the largest weekly increase since February, 1943, and was particularly marked in the north. Lancashire had 295 more cases than last week, Warwickshire 202, Cheshire 135, Southampton 77, Staffordshire 68, Yorks West Riding 68, Nottinghamshire 64, Gloucestershire 50, and London 45.

The increase in dysentery was due mainly to the large outbreak in Yorks West Riding, Wortley R.D., where 130 cases were reported. The largest of the other returns were Lancashire 49, London 44, Surrey 20, Norfolk 16, and Glamorganshire 11.

In *Scotland* there was a general rise in the incidence of infectious diseases. The rises over last week's totals included measles 114, acute pneumonia 81, diphtheria 38, whooping-cough 35. A small increase in the incidence of diphtheria was general throughout the country; the largest returns were Glasgow 69, Lanark County 30, Edinburgh 19, Fife County 12, and Dundee 11.

In *Eire* there were 23 more cases of diphtheria than last week. Thirty-two cases were recorded in Dublin C.B., and the remaining 101 notifications involved forty-eight registration areas.

In *Northern Ireland* the incidence of measles rose by 68, and scarlet fever by 27. All but one of the 259 cases of measles were notified in Belfast C.B., which also reported 48 of the 117 cases of scarlet fever.

Week Ending December 2

The returns of infectious diseases in England and Wales during the week included: scarlet fever 2,279, whooping-cough 1,474, diphtheria 637, measles 7,810, acute pneumonia 761, cerebrospinal fever 39, dysentery 381, paratyphoid 3, typhoid 7, poliomyelitis 10.

Medical News

Prof. J. M. Mackintosh, M.D., F.R.C.P., has been appointed Dean of the London School of Hygiene and Tropical Medicine from Jan. 1, 1945.

A meeting of the Association for Scientific Photography will be held at the Caxton Hall, Westminster, S.W., on Saturday, Dec. 30, at 2.30 p.m., to discuss "The Choice of Materials for Scientific Photography."

A meeting of the Eugenics Society will be held on Tuesday, Dec. 19, at 5 o'clock in the rooms of the Royal Society, Burlington House, Piccadilly, W., for a discussion on "Aspects of the Housing Problem." All interested in the subject are invited to attend.

Vacancies are available for training in child psychiatry at centres recognized by the National Provisional Council of Mental Health for this purpose. Applicants should have the D.P.M. or equivalent mental health experience, together with experience of children in specialist or general practice. Training fee, £60; length of training, one year, half-time. Application may also be made for grants or loans. Applications should be sent to the secretary, Child Guidance Department, 39, Queen Anne Street, London, W.1.

Grants for more than £825,000, made by the United Kingdom Government under the Colonial Development and Welfare Act, 1940, have enabled the Uganda Protectorate to plan for the largest hospital and one of the most extensive health services in the British Colonial Empire. A grant of £477,500 will provide for the reconstruction and extension of Mulago Hospital, Kampala, so that 1,120 beds are available. A further sum of £350,000 for the extension of medical services will be used for the following: training of staff, £92,000; antimalarial campaign, £75,000; antivenereal diseases campaign, £63,000; antituberculosis campaign, £50,000; nutrition survey, £40,000; ambulance service, £30,000.

Mr. Thomas F. A. Stowell, M.D., F.R.C.S., has been re-elected to the Council of the Industrial Welfare Society, of whose advisory medical committee he is chairman.

Universities and Colleges

UNIVERSITY OF MANCHESTER

The following appointment is announced: Dr. G. J. Langley, F.R.C.P., Dean of Postgraduate Medical Studies.

The University has received a grant of £750 for the Department of Education of the Deaf from the Nuffield Provincial Hospitals Trust per the Manchester, Salford, and Stretford Hospitals Advisory Board.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Faculty held on Dec. 4 with the President, Mr. William A. Sewell, in the chair, James Black, M.D., and Matthew McLearie, M.B., Ch.B., were admitted Fellows of Faculty.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Etherington-Wilson Technique for Spinal Analgesia

Q.—*What is the Etherington-Wilson technique for spinal anaesthesia, and where may full descriptions of the method be found? Is it a widely used technique?*

A.—The original spinal technique described by Etherington-Wilson made use of Howard Jones's "light" or hypobaric 1 in 1,500 nupercaine solution in 0.5% saline. The lumbar puncture was performed in the sitting position, and the volume of solution injected and the time allowed for sitting up were calculated according to the desired height of analgesia. A full description of the method will be found in the *British Journal of Anaesthesia* (1934, **11**, 43). Several modifications of the technique were recently described by Etherington-Wilson at a meeting of the Anaesthetics Section of the Royal Society of Medicine, and these will presumably be published in the *Proceedings*. The original method has been fairly widely used by some anaesthetists.

Stilboestrol for Masturbation

Q.—*Are there any records of the treatment of masturbation by the administration of stilboestrol? Also, are there any contra-indications against the administration of stilboestrol for long periods in the years of early and acute sexual desire?*

A.—Yes. A record may be found in the *Journal of Nervous and Mental Diseases* (June, 1944, **99**, 928) describing the case of a psychopathic seaman 19 years old whose sexual preoccupation and frequent masturbation were very favourably modified by 1 mg. of stilboestrol by mouth daily, the only apparent adverse effect being mild gynaecomastia. Treatment was given intermittently (see also *J. Amer. med. Ass.*, 1944, **125**, 760). The writer has used stilboestrol in 5-mg. doses in a lad of 17 brought before the courts for sexual assault. The patient was gigantic with some acromegaloid features. The stilboestrol permitted him to control intense sexual desire, and to reduce the frequency of masturbation considerably. Here, too, there was some resulting tenderness and swelling of the breasts.

Large doses of stilboestrol in the normal male, or in cases of carcinoma of prostate, may produce disappearance of libido and impotence; also a considerable diminution in the sperm count, where such is possible. Experimentally, disintegration of the testicular structure occurs in small animals, but regeneration and normal sexual function follow withdrawal of the stilboestrol. It would appear that controlled doses of stilboestrol, given intermittently, may prove a useful and harmless form of therapy in selected cases. Prolonging the administration is associated with certain dangers indicated above. It would be unwise to neglect the appropriate treatment of an underlying psychoneurosis where such is present.

Chronic Otorrhoea

Q.—*In cases of chronic or relapsing otorrhoea in adults, is there any treatment other than the usual (and generally ineffectual) application of guttae spt. c boric. (or similar)? Is there any danger in irrigating, not syringing, the meatus with sterile saline solution? Can any sulphonamide preparation be used locally?*

A.—As there are many cases of chronic otorrhoea in which local treatment alone is useless the first step in successful treatment is accuracy in diagnosis. Two common causes of chronicity must be kept in mind: unsuspected nasal sinusitis, and chronic infection of the bone of the attic and mastoid. The success of local treatment depends as much on efficient removal of discharge from the middle ear as on the type of local application. Syringing is harmless, providing the ear is dried with cotton-wool or spirit. Inflation or suction may be needed before the middle ear is empty. After cleaning, powders—either sulphonamide, or boric, or boric and iodine—give on the whole better results than drops.

Leucodermia

Q.—*A girl aged 3 years is suffering from leucodermia. The first patch was noticed six months ago in the epigastric area. Patches are now present symmetrically in axillae, groins, knees, and anterior aspect of the neck, and are about 5 in. in diameter, slowly increasing in size. General health is good, although the tonsils are enlarged. What form of treatment, if any, will improve this complaint?*

A.—There is little to be done for leucodermia. Oil of bergamot 10% in spirit applied to the white areas has been suggested, and its effect may be augmented by exposure to ultra-violet radiation. Injection of one of the gold preparations is supposed to increase the chance of pigmentation, but in my experience it is valueless for this purpose. The skilful use of cosmetic preparations is a simple, if not very satisfactory, solution.

Sprouting Legumes

Q.—*In these days of shortage of citrous fruits, may we know the technique of sprouting legumes? Is this an economic proposition, which legumes are best used, and what and how much cooking is required?*

A.—When legumes are sprouted in order to improve the ascorbic acid content of the diet, it is usually recommended that they should be soaked for about 24 hours, drained, and then allowed to germinate for three or four days. The preliminary soaking is important and should be carried out at room temperature. If too hot water is used there is a tendency for the legumes subsequently to become mouldy, while if the soaking water is too cold germination may be delayed. On the family scale, germination may be carried out by allowing the soaked legumes to stand in a colander, but when larger quantities are involved the use of trays is advocated. The sprouting of legumes before cooking appears to be an economic proposition, and records have been obtained, particularly in the last war, of instances where these vegetables have proved of real value in an otherwise ascorbic-acid-free diet. Practically any legume may be used, but peas, beans, and soya beans are most frequently quoted. Haricot and navy beans are on the whole unsatisfactory; they germinate so slowly that putrefaction may take place before the process is complete. Cooking is best carried out by adopting the conservative method for vegetables, in which the lid is kept on the saucepan and only a relatively small volume of water used. Although the texture of the legumes is naturally an important factor in determining the time of boiling, overcooking is to be avoided, not only because of increased loss of ascorbic acid but also because of the diminution in flavour with increased softness of the vegetable.

Survival after Long Immersion

Q.—*A boy playing near a deep pool fell in and was under water after the third submersion for a minimum of nine minutes. Artificial respiration was carried out and the boy recovered. What is the maximum known time a person (child or adult) can remain under water after a third submersion and yet be revived after artificial respiration?*

A.—It is still a common fallacy that immersion under water for more than four or five minutes is invariably fatal. In the paper on "The Need for Prolonged Artificial Respiration in Drowning, Asphyxiation, and Electric Shock," by Bates, Gaby, and Maclachlan (*Canad. med. Ass. J.*, August, 1938), six instances are recorded of recovery after prolonged immersion. In one of these the time of immersion was between 32 and 35 minutes, in a second 30 minutes, and in the third it was between 20 and 30 minutes. In the case now reported in the question it would be interesting to know for how long artificial respiration was maintained. The arguments in favour of immediate, prolonged, and persistent artificial respiration in apparent death from drowning or electrocution are put forward by Payne in the *B.M.J.* of May 18, 1940. The drowned person is, for a time at least, in a condition of suspended animation: respiration has ceased, the heart sounds are inaudible, but the cardiac complexes may persist for a considerable period of time; the onset of rigor mortis is the only certain proof of death.

Obstetric Forceps

Q.—*What type of short obstetrical forceps can be recommended for extraction of the head when it is low down on the perineum?*

A.—Wrigley's forceps were designed specifically as low forceps for extracting the foetal head through the vaginal orifice. It is an excellent instrument for this type of case. If, however, the foetal head is higher up, the best instrument is that advocated by DeLee under the name of the Vienna School forceps. This is a modification of the original Simpson's pattern. These forceps are quite simple to use. Most obstetricians use forceps of this kind for all cases and do not find it necessary to use Wrigley's forceps.

Smegma under the Prepuce

Q.—*What is the cause of smegma under the prepuce and how can it be treated? Several patients have complained of this disturbing factor, and it has been more marked after ratings have been on detached duties where regular bathing has not been possible. Is it the cause, or vice versa, of non-venereal warts? Microscopically only debris and varied crystals are seen.*

A.—Smegma is the normal secretion of Tyson's glands. It tends to be formed in excessive amounts in hot climates, and by evaporation it gives rise to dried debris and sometimes even to concretions. It is stated to be a cause of non-venereal warts, but this is by no means certain. Washing of course removes excess of the secretion, but under conditions of active service this may be difficult to effect.

LETTERS, NOTES, ETC.

Piercing the Ears

Dr. P. C. MATTHEW (St. Ives, Cornwall) writes: I have performed this small operation fairly often, and find that the following refinements in technique are well worth while. (1) I inject 1/2 c.cm. local anaesthetic in each lobe; the patient then feels nothing except the initial prick with an 18-gauge hypodermic needle. (2) For piercing I use a large-bore intramuscular needle, pushed through the lobe into a cork; then I remove the cork, place one end of the split-ring or "keeper" in the open end of the needle, and withdraw the needle through the lobe, with the keeper following through. This avoids some difficult groping with the none-too-sharp end of the keeper, to find the holes. (3) I grease the keepers with vaseline and tell the patient to move them round at least once a day, and not to take them out until they remain perfectly free. This may require up to two weeks. (4) I make the perforation high up in the lobe; in time the lobe stretches, particularly with heavy ear-rings, and the hole made in the centre will eventually appear to be near the bottom, with the result that certain kinds of flat ear-rings will not sit properly.

Brandy as an Anaesthetic

Dr. E. K. BLACKBURN (Skegness) writes: With reference to Dr. R. K. Brooks's letter (Oct. 28, p. 586), brandy is used as the routine anaesthetic at Skegness Hospital for circumcision in infants within two weeks of birth. The method was suggested by Sir W. G. Ashton some months ago. Ordinary cane sugar in a small muslin bag is dipped into 50% brandy and water. The infant is given the bag to suck five minutes before the operation, the anaesthetic being continued throughout. Results are excellent.

Hints for "Hangovers"

Surg. Lieut. M. G. JACOBY (R.N.V.R.) writes: Regarding the question and answer on "hangovers" (*Journal*, Nov. 11, p. 648) the following prescription is excellent: R Spt. ammon. aromat. ℥ xx; tinct. cardamom. co. ℥ xxx; aq. ad ℥ss. For some unexplained reason ascorbic acid tablets likewise relieve the "hangover."

The "Doctor" Label

Dr. A. R. RENDLE (Godalming) writes: Now that the fear of invasion is practically a thing of the past is it not time that medical men should discard the vulgar advertisement of "Doctor" on their motor cars?

Correction

A misprint occurred in Dr. A. A. Osman's letter "A National Renal Service" (Dec. 2, p. 734). In the fourth line from the end the words "renal surgeon" should have been "renal physician."

WILLIAM R. WARNER AND CO. LTD. have had to limit the circulation and omit the usual features of the Warner Diary and Calendar of Medical History for 1945. Until supplies are exhausted a copy will be sent to any doctor who makes a request to the firm (150 Kensington High Street, London, W.8), enclosing a 1d. stamp to comply with regulations.